App. F. IX-4

193

File No.

Previous References ( )

Serial Nos.

Letter References.

GENERAL AND REVENUE SECRETARIAT.

Serial Nos.

Part B for

SUBJECT.

WD 0418—GPB—22,500—29-8-36

N O T E.

This note has reference to the revised scheme drawn up by Dr. Badami (Flag S). He and I went through it with a view to reduce expenditure wherever possible. As a result of our scrutiny two statements have been prepared - Statement II shows the non-recurring expenditure and Statement III the recurring expenditure in the first five years after the scheme is started. Statement I is an abstract of the Statements II and III and this abstract also shows how the expenditure is shared between the I.C.A.R. and the Government. Excluding the value of the buildings at Soldevanahalli which are estimated at Rs.38,000/- the expenditure to be borne by Government - both recurring and non-recurring, in the first 5 years will be as under -

1st Year	-	45,962
2nd Year	-	9,189
3rd Year	-	9,401
4th Year	-	9,923
5th Year	-	10,944
Total		85,419

From the 6th year onwards the level of recurring expenditure on the Research Station will stand at Rs. /8674 per annum and the whole of this will have to be borne by Government unless the I.C.A.R. can be persuaded to renew the grant.

As regards receipts Dr. Badami does not expect to get anything from the miscellaneous fruits in the 1st five years. Apples are expected to give 6 crops before the close of the fifth year and yield a revenue of Rs.20,000/- This seems to be an optimistic estimate. In a manuscript note (Flag T) attached to his revised scheme Dr. Badami has previously estimated the receipts from this source at Rs.8,400 only.

As regards buildings those that are shown in Statement II are situated in Soldevanahalli. If as is now proposed, the staff are provided with quarters at Thurubanahalli the estimated value of the buildings and the cost of repairing and altering them will have to be suitably revised.

The Military Authorities have offered to sell to this Government the Turubanahalli Pumping Station and the case is being worked up in the Public Works Secretariat. It is proposed to offer for the Station a sum of Rs. One lakh and this represents the scrap value of machinery, buildings etc. The buildings available at Thurubmnahalli are -

(1) Pumping Station

(2) Value Chamber

(3) Helpers and Cleaners quarters

(4) Assistant Driver's quarters

(5) Driver's quarters

(6) Superintendent's quarters

(7) Stores

(8) Travellers' Bungalow.

The original value of these buildings is stated to be Rs.53,013 and it is proposed to buy them for their break-up value viz., Rs.3867/-. It is stated that there is a demand for these buildings for the location of the Sulphuric Acid Factory and Sanitary Ware Factory.

The work on miscellaneous fruits is proposed to be restricted to the following -

(1) Collection of known varieties in India and outside.

2) Multiplication of desirable varieties and their distribution to sub stations for large-scale-trial.

Besides, pine-apple, mangoes, oranges, grapes and guava will receive special attention.

The bulk of the Research work will fall upon the Scientific Asstt. He must therefore be a first rate man. A B.Sc. I Class or M.Sc. with Botany as main subject and Zoology and Chemistry as subsidiary subjects should be chosen. It is better to recruit a Mathematics B.Sc. with a knowledge of statistics for the post of the clerk so that his services may be made use of by the Scientific Asstt. for drawing graphs etc.

This note has reference to the site marked A in the sketch - Flag U.

Fruit Research Scheme.

Statement No.1.
Abstract of expenditure.

Statement II	1st year.	2nd year.	3rd year.	4th year.	5th year.	Total.	6th year onwards
Non-recurring	74,300	-	500	1,000	2,000	77,800	
Statement III.							
Recurring	18,770	18,597	17,889	18,151	18,441	91,819	18,674
Total.	93,070	18,597	18,389	19,151	20,412	1,69,619	18,674
Deduct.							
Contribution by I.C.A.R.	9,108	9,408	8,988	9,228	9,468	46,200	
Balance to be borne by Government.	83,962	9,189	9,401	9,923	10,944	1,23,419	18,674
Deduct value of buildings available at Saldevanahalli	38,000	-	-	-	-	38,000	-
Cash expenditure to be incurred by Government.	55,070	9,189	9,401	9,923	10,944	85,419	18,674

F R U I T R E S E A R C H S C H E M E.

STATEMENT No.II.

5

Estimate of Non-Recurring Expenditure.

Item	Description	COST 1st year	2nd year	3rd year	4th year	5th year	Total	Remarks.
I Land	50 acres at Rs.250 per acre.	12,500					12,500	45 acres for cropping and 5 ~~xxx~~ acres for building roads, etc.
	I Total....	12,500					12,500	
II Buildings	(1) Quarters for the Farm Manager	5,000					5000	
	(2) -do- Scientific Assistant	3,000					3000	
	(3) -do- for 2 Foremen, Plant Propagator, Clerk and Driver (5 Buildings)	8,000					8000	
	(4) -do- for Menials (Laboratory Attender and 2 peons.).	2,000					2000	
	(5) Office, Stores and Laboratory...	20,000					20,000	
	Tota of (1) to (5)	38,000					38,000	

(6)	10% of Rs.38,000 for alterations and repairs.	3,800	2			3,800
(7)	Cattle Shed	1,000				1,000
(8)	Potting shed and Propagating Frame	2,000				2,000
(9)	Implements shed and Field office	1,000				1,000
(10)	Pump House	2,000				2,000
	II Total.....	47,800				47,800

	1st year	2nd year	3rd year	4th year	5th year	Total
III Other Items						
(1) Fencing - 45 acres	3000					3,000
(2) Formation of land, pitting, layout and plots, etc.	3,000					3,000
(3) Pump with pipe connections	5,000					5,000
(4) Laboratory Equipment	2,000					2,000
(5) Stores Equipment	-		5,00	1,000	2,000	3,500
(6) Bullocks - 5 pairs	1,000					1,000
III Total.....	14,000		5,00	1,000	2,000	17,500
Grant Total.....	74,300		500	1,000	2,000	77,800

Fruit Research Scheme.
Statement No.III.

I t e m.	Description	Estimate for recurring expenditure C O S T. 1st year	2nd year	3rd year	4th year	5th year	Total	6th year on wards.	Remarks
IV.Establishment	(1 Farm Manager 100-10-150	1200	1320	1440	1560	1680	7200	1800	
	(2) Foremen 2 (40)	960	960	960	960	960	4800	960	
	(3) Plant Propagator 50-5-75	600	660	-	-	-	1200		From the 3rd year the work will be transferred to the Depts concerned
	(4) Scientific Assi tan. 75-5-100	900	960	1020	1080	1140	5100	1200	
	(5) Laboratory Attender 1 (20)	240	240	240	240	240	1200	240	
	(6) C l e r k 35-5-60	420	480	540	600	660	2700	720	
	(7) D r i v e r 1 (30)	360	360	360	360	360	1800	360	
	(8) P e o n s 2 (12)	288	288	288	288	288	1440	288	
	(9) Leave allowance at 1/11th Salary	452	479	441	463	484	2319	506	
	IV Total	5420	5747	5289	5551	5812	27819	6074	

Other items of recurring expenditure.	(1 Cost of cultivation (i) Apples -25 acres. at Rs. 260/- for 2 crops per year per acre plus -- Rs. 500/- for planting in the first year.	7800	6500	6500	6500	6500	33000	6500
	(ii) Mis.fruits - 20 acres at Rs. 100/-per acre.	2000	2000	2000	2000	2000	10000	2000
	(2) T.A. to staff	200	300	200	200	200	1000	200
	(3) Manure	500	1000	1000	1000	1000	4500	1000
	(4) Tools and implements	1000	500	250	250	250	2250	250
	(5) Electric power	600	600	600	600	600	3000	600
	(6) Fodder and concentrates for 5 pairs of bullocks.	1250	1250	1250	1250	1250	6250	1250
	(7) Contingencies	400	400	400	400	400	2000	400
	(8) Maintenance of roads and buildings.	400	400	400	400	400	2000	400
	V Total	13350	12850	12600	12600	12600	64000	12600
	Grand total.	18770	18597	17639	18151	18412	91819	18674

The buildings available at Soldevanahalli for the Irrigation Research Station

1) Travellers Bungalow
2) One Drivers quarters
3) One Apprentice drivers quarters
4) Firemens lines — Two quarters
5) The old Boiler room in the Pumphouse

Buildings available at Turbanahalli

1) Pumping Station	1
2) Valve chamber	1
3) Helpers & cleaners quarters	2
4) Asst Drivers quarters	1
5) Drivers quarters	1
6) Superintendents quarters	1
7) Store	1
8) Travellers Bungalow	

Note on the Fruit Scheme sanctioned by the Imperial Council of Agricultural Research.

The Scheme sanctioned by the Imperial Council of Agricultural research of Fruit cultivation in the Mysore State in has several defects which are pointed below

The scheme has been sanctioned for five years only and from the sixth year onwards the Mysore Government will have to shoulder even the recurring expenditure which amounts to be about Rs. 10000/- per annum according to the present estimates even this is an under estimate. As it is the Government will have to spend an initial sum of not less than Rs 80000/- towards non-recurring expenditure for the purchase of lands water pumps etc. According to the scheme the realisation of sale proceeds will have to go to the council through -out for five years and thus Government which bears the great part of the cost gets nothing, while the council which pays a sum of Rs 46200 for five years would obtain sale proceeds year after year. This is a distinctloss to Government. It is impossible to get - definite results which would be valuable in furthering the fruit growing industry, of the State within that period. The Station, if it is really to be useful, must be placed more or less on a permanent basis or for a long period at least 20 years, so that results achieved may be watched and collected and fully made use of.

By restricting the scheme to apples and certain Miscellaneous new tropical fruits the scheme has ignored the conditions in the State. We have both maidan and malnad fruits to study and develop e.g. mangoes, figs, grapes, plantains, guavas, in the maidan and citrus and pine apples in the malnad The fruits grown at Mysore State are quite different varieties to that of those grown in other parts of India or in the plains, since high elevation, temperate climate, rainfall and the absence of frost, modify the growth and development of plants here. Hence most of the results achieved by I.C.A.R. experiments in Mangoes and oranges in Northern India will not suit contitions on the Mysore plateau. Hence the scheme ought

to provide for the inclusion of the mango, oranges, figs, grapes in Mysore state. Since the council will not sanction expenditure on mango and orange development, the Mysore Government will have to carry out this part of the scheme on their own account at additional cost. From the above it is seen that the present scheme sanctioned by the council from the Mysore state is inadequate and unsatisfactory. There are at present about 18000 acres under mangoes and a very large area under oranges and other citrus fruits and the apples are only confined to about 500 acres in the maidan mostly round about Bangalore If the Government were to place at the disposal of the Gardens Deptt non-recurring grant to which they are committed by the scheme together with a small recurring expenditure for about 10 or 20 years, the Department could unaided by the council grapple with all the problems of all the commercial fruits in the State and at the same time earn for Government at least the recurring expenditure, if not a profit over it. Nursery work which is the most important part of any such scheme as this, is not provided by the council and this alone which can be easily undertaken by the Department will be a source of income not to speak of its usefulness in distributing reliable and profitable varieties among the fruit growers. At present most of the fruits grown in the state are not at all standardised, in the same variety there is much difference in the size, shape, color, flavour, fibre content, keeping qualities and disease, resistance. Unless the fruits are standardised a good export trade cannot be built. Propagation of standardised stocks and scions are quite essential. The I.C.A.R. insists that the planting of the whole orchard should be completed in one or two years presuming that the imported stocks would be used for grafting work. Experience has shown that the apple stocks imported from other countries directly have not been found suitable for local conditions until they have become properly acclimatised. Experiments have to be conducted to raise seeds from exotic stocks and propagate them separately and by cross breeding for fixing characters The evolving of the stock alone in this manner will take from 10-20Yrs

In regard to the manurial experiments, it has to be pointed that so far as Mysore is concerned good results are obtained both with organic and chemical manures. In any case manurial experiments on exotic stock are not of much value since stock itself requires improvement first. It is therefore my considered opinion that scheme now sanctioned by I.C.A.R. is not worthwhile, since it is too costly and unprofitable. It is besides restricted mainly to apples which after all occupies a small part of thearea under fruit cultivation and which is a crop lasting about five years and the life of the plant being restricted to ten years. There is not much experiment needed under Miscellaneous fruits such as Sapota, Litchi etc as they have been already under cultivation in Government Gardens. As the Scheme has to be worked out in the vicinity of Bangalore nothing can be done in regard to the malnad fruits.

If Government accepts the suggestion already made above to run the scheme on its own account Sub Stations could be opened in different centres developing the Krishnarajasagara orchard for experiments in mangoes, apples, plantains, figs, grapes, Kadur district for citrus and pine apples and Central Nursery at Lalbagh and better work could be turned out and useful to the fruit growers of the State. Details will be submitted if Government approve the above outlines.

G.R.S. III—3]

11

Routine Notes.

[To be used only for notes, requisitions, etc., not intended for permanent record.]

P.W. Secty file

Secy.

The Financial Branch may kindly be requested to ~~kindly~~ send the file re the purchase of building at Tirubanthalai Pumping Station (belonging to the C.P.W. Station) by the Mysore Govt. as the same is required by the Chief Secy for reference in connection with fixing up of a site for locating the Fruit Research Station. The file will be returned to the Fin Branch when done with

Ag M.V.R

20/1/37

Ag Secy

R.O. H 721/A

The Connected file is placed below.

Ag Asst Secy

Handed over to the Addl Assistant

Ref to Fin (Bdr) 26/1/37

Ag

N.B.—*Should routine notes be written on small slips, the notes must be copied, or slips pasted on this form.*

Points for discussion

I The area to be selected for the initiation of the Scheme: It has been suggested that the following localities may be considered.

(a) Lands near Lal Bag under Siddapur Tank. It is Estimated that more than 100 acres are available there.

(b) Lands under the Hirisavige Katta Tank.

II. The Extent to be taken up for cultivation.

The I.C. of A.R. require that 45 acres should be set apart for this open Area of which 25 ac. will be for apples and the remaining Extent for miscellaneous fruits including pine apples.

Since miscellaneous fruits and pine apples are being Experimented in the Lal Bag and Krishnaraj Sagara an Extent of 30 acres would suffice for development of apple cultivation. The grant made by the I.C. of A.R. for maintenance should be asked for this reduced Extent.

III Non-recurring Expe:- to be met by the Govt. of Mysore.

Excluding buildings etc that are available in the Lal Bag the net amount req^d for addl. items comes to Rs ~~47750~~ 47500 for 5 years. (Vide Statement attached).

Recurring Expe. Rs 20500.

The Non-recurring Expe for the first year will be Rs 45750. This has to be provided immediately the Scheme is Sanctd, as also the first years recurring Expe amounting to Rs 3300.

IV Future of the Scheme at the end of 5 years.

The Scheme with its results of the Scheme can be judged only at the end of 3 years and it will be necessary to continue request the I.C. of A.R. to continue the grant for another period of 5 years.

The recurring cost of the Govt. of Mysore during the period of Extension will be Rs 5000 per year, assuming that the I.C. of A.R. will continue the scheme. Otherwise it will be Rs 14,000 (Vide Statement 2).

V. Receipts from the Scheme

The I.C. of A.R. require the amount to be credited to their fund. But as a great part of the Expenditure is met from State funds, the receipts should go to the Mysore Govt. after, also these pages, till beginning of yield from the end of the third year. The yield is estimated at Rs 5000/- per year after 3 years.

VI Conditions of the Grant.

Cl.(7) of the conditions to be observed requires that the work in the fields circles of what is stated in Clause V supra.

Re: Fruit Scheme

POINTS FOR DISCUSSION.

I. The area to be selected for the initiation of the Scheme: It has been suggested that the following localities may be considered.

(a) Lands near Lalbagh under Siddapur Tank. It is estimated that more than 100 acres are available here.

(b) Lands under the Hesserghatta Tank.

II. The extent to be taken up for cultivation.-

The Imperial Council of Agricultural Research require that 45 acres should be set apart for this purpose of which 25 acres will be for apples and the remaining extent for Miscellaneous fruits including Pine apples.

Since Miscellaneous fruits and Pine apples are being experimented on in the Lalbagh and Krishnarajasagara an extent of 30 acres would suffice for development of Apple cultivation. The grant made by the Imperial Council of Agricultural Research for maintenance should be asked for this reduced extent.

III. Non-Recurring Expenditure :- to be met by the Government of Mysore. Excluding buildings etc that are available in the Lalbagh, the net amount required for additional items comes to Rs 49500/- for five years (Vide -- Statement attached).

Recurring Expenditure .. Rs 20500/-

The Non-recurring Expenditure for the first year will be Rs 43300/-. This has to be provided immediately the scheme is sanctioned, as also the first year's recurring expenditure amounting to Rs 3300/-.

IV. Future of the scheme at the end of five years.-

The results of the scheme can be judged only at the end of three years and it will be necessary to request the Imperial Council of Agricultural -- Research to continue the grant for another period of five years. The - recurring cost to the Government of Mysore during the period of extension will be Rs 5000/- per year assuming that the Imperial Council of Agricultural Research will continue the scheme; otherwise it will be Rs 14000/- (Vide-Statement 2).

V. Receipts from the Scheme.

The Imperial Council of Agricultural Research require the amount to be credited to their fund. But as a great part of the expenditure has to be

to be met from State funds, the receipts should go to the Mysore - Government, after all the Farm will begin to yield from the end of third year. The yield is estimated at 5000/- per year after 3 years

VI. Conditions of the grant.

cl (7) of the conditions to be observed requires to be modified in view of what is stated in Item V Supra.

-:0:-

Estimate of cost to be met by Government of Mysore.

NON-RECURRING CHARGES.

Sl.No.	Particulars.	Actual contribution including the - valuation of the - buildings etc.	Actual amount required. 1st Year.	2nd Year.	3rd Year.	4th Year.	5th Year.	Remarks.
1.	LAND:(a)30 acres @ ₹500/- per acre.	15000	15000	..	..	..	..	
2.	BUILDINGS:-							
(a)	Farm Manager's Quarters	..	..	..	..	..	..	
(b)	Scientific Assistant's Quarters	..	..	..	..	..	..	
(c)	Quarters for Menial Staff Watchmen	1000	1000	..	..	..	..	
(d)	Cattle shed at Lalbagh ..	2000	..	..	..	..	..	
(e)	Potting & Grafting shed (Fruit Nursery-Lalbagh)	5000	..	..	..	..	..	
(f)	Implement shed	1000	1000	..	..	..	..	
(g)	Office-(Hortl.School Building) ..	10000	..	..	..	..	..	
(h)	Stores-(Barn at the Horticultural Farm).	10000	2000	..	..	..	..	For alterations
(i)	Laboratory(Bureau of Economic Botany-Building)	10000	..	..	..	..	..	
3.	OTHER ITEMS.							
(a)	Fencing 30 acres ..	2500	2500	..	..	..	..	
(b)	Formation of land, drains, roads, pitting &c.	6000	6000	..	..	..	..	
(c)	Storage tanks, wells etc.	6000	6000	..	..	..	..	
(d)	Pumps with pipe connections..	6000	6000	..	..	..	..	
(e)	Two pairs of Bullocks	500	500	..	..	..	..	
		2000	2000	..	..	..	..	
		6000	3000	1000	1000	500	500	

		1500	750	250	250	..	250	
		81500	45750	1250	1250	-500	750	.. Rs 49500/-
RECURRING CHARGES.								
(a) Ma.	..	4500	500	1000	1000	1000	1000	
(b) Cattle ed	..	2000	400	400	400	400	400	
(c) Leave, Travelling Allowances & Provident-Fund)..		5000	978	998	944	980	1116	
(d) Electric Power & Driver's wages	..	6000	860	1110	1310	1360	1360	
(e) Maintenance of Roads and Buildings	..	1000	200	200	200	200	200	
(f) Unforseen charges	..	2000	400	400	400	400	400	
		20500	3322	4108	4254	4340	4476	
GRAND TOTAL:-	Rs 105000/-		49072/-	5358/-	5504/-	4840/-	5226/-	.. Rs 70000/-
RECEIPTS.								
Receipts from 16 acres of Apples.. NIL.			NIL.	NIL.	NIL.	5000	5000	.. Rs 10000/-

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Recurring Expenditure from 6th to 10th Year.

Particulars.	6th Year.	7th Year.	8th Year.	9th Year.	10th Year.		Total.
1. Mysore Government	5000	5000	5000	5000	5000	=	Rs 25.000/-
2. Imperial Council of Agricultural Research.	9240	9240	9240	9240	9240	=	Rs 46,000/-
						Total:-	Rs 71,000/-

RECEIPTS.

Receipts	5000	5000	5000	5000	5000	=	Rs 25,000/-

Re: Fruit Scheme

POINTS FOR DISCUSSION.

I. The area to be selected for the initiation of the Scheme:- It has been suggested that the following localities may be considered

(a) Lands near Lalbagh under Siddapur Tank. It is estimated that more than 100 acres are available here.

(b) Lands under the Hessarghatta Tank.

II. The extent to be taken up for cultivation.

The Imperial Council of Agricultural Research require that 45 acres should be set apart for this purpose of which 25 acres will be for Apples and the remaining extent for Miscellaneous fruits including Pine apples.

Since Miscellaneous fruits and Pine apples are being experimented on in the Lalbagh and Krishnarajasagara an extent of 30 acres would --- suffice for development of Apple cultivation. The grant made by the Imperial Council of Agricultural Research for maintenance should be asked for this reduced extent.

III. Non-Recurring Expenditure:- to be met by the Government of Mysore.- Excluding buildings etc that are available in the Lalbagh, the net amount required for additional items comes to Rs 49500/- for five years (Vide Statement attached).

Recurring Expenditure .. Rs 20500/-

The Non-recurring Expenditure for the first year will be Rs 45750/-. This has to be provided immediately the scheme is sanctioned, as also the first year's recurring expenditure amounting to Rs 3300/-.

IV Future of the Scheme at the end of five years.-

The results of the scheme can be judged only at the end of three years and it will be necessary to request the Imperial Council of Agricultural Research to continue the grant for another period of five years. The recurring cost to the Government of Mysore during the -- period of extension will be Rs 5000/- per year assuming that the - Imperial Council of Agricultural Research will continue the scheme; otherwise it will be Rs 14000/- (Vide Statement 2).

V. Receipts from the Scheme.

The Imperial Council of Agricultural Research require the amount to be credited to their fund. But as a great part of the expenditure has to be met from the State funds, the receipts should go to the Mysore Government, after all the Farm will begin to yield from the end of the third year. The yield is estimated at Rs 5000/- per year after 3 years.

VI. Conditions of the grant:-

Cl (7) of the conditions to be observed requires to be modified in view of what is stated in Item V Supra.

-:0:-

Estimate of cost to be met by Government of Mysore

NON-RECURRING CHARGES.

Sl.No.	Particulars.	Actual contribution including the valuation of the buildings etc.	Actual amount required. 1st Year.	2nd Year.	3rd Year.	4th Year.	5th Year.	Remarks.
1.	LAND:(a)30 acres @ Rs.500/- per acre.	15000	15000	..	..	..	..	
2.	BUILDINGS:-							
(a)	Farm Manager's Quarters	..	..	..	..	..	..	
(b)	Scientific Assistant's Quarters	..	..	..	..	..	..	
(c)	Quarters for Menial Staff Watchmen	1000	1000	..	..	..	..	
(d)	Cattle shed at Lalbagh ..	2000	..	..	..	..	..	
(e)	Potting & Grafting shed (Fruit Nursery-Lalbagh)	5000	..	..	..	..		
(f)	Implement shed	1000	1000	..	..	..	..	
(g)	Office-(Hortl.School Building) ..	10000	..	..	..	..	..	
(h)	Stores-(Barn at the Horticultural Farm).	10000	2000	..	..	..	..	For alterations.
(i)	Laboratory(Bureau of Economic Botany-Building)	10000	..	..	..	..	..	
3.	OTHER ITEMS.							
(a)	Fencing 30 acres ..	2500	2500	..	..	..		
(b)	Formation of land, drains, roads, pitting &c.	6000	6000	..	..	..		
(c)	Storage tanks, wells etc.	6000	6000	..	..	..		
(d)	Pumps with pipe connections ..	6000	6000	..	..			
(e)	Two pairs of Bullocks ..	500	500	..	.	..		
(f)	Laboratory equipment ..	2000	2000	..	..			
(g)	Plants and seeds ..	6000	3000	1000	1000	500	500	

		Rs 84500/-	45750	1000	1000	1000	Rs 49500/-

RECURRING CHARGES.

(a) Manure.	..	4500	500	1000	1000	1000	
(b) Cattle feed	..	2000	400	400	400	400	
(c) Leave, Travelling Allowances & Provident-Fund)..		5000	978	998	944	980	1116
(d) Electric Power & Driver's wages	..	6000	860	1110	1310	1360	1360
(e)Maintenance of Roads and Buildings	..	1000	200	200	200	200	200
(f)Unforseen charges'	..	2000	400	400	400	400	400
		20500	3322	4108	4254	4340	4476
GRAND TOTAL:-		Rs 105000/-	49072/-	5358/-	5504/-	4840/-	5226/- .. Rs. 70000/-

RECEIPTS.

Receipts from 16 acres of Apples..		NIL.	NIL.	NIL.	NIL.	5000	5000 .. Rs 10000/-

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Recurring Expenditure from 6th to 10th Year.

Particulars.	6th Year.	7th Year.	8th Year.	9th Year.	10th Year.		Total.
1. Mysore Government	5000	5000	5000	5000	5000	=	Rs 25,000/-
2. Imperial Council of Agricultural Research.	9240	9240	9240	9240	9240	=	Rs 46,000/-
						Total:-	Rs 71,000/-

RECEIPTS.

Receipts	5000	5000	5000	5000	5000	=	Rs 25,000/-

Re: Fruit Scheme

POINTS FOR DISCUSSION.

I. The area to be selected for the initiation of the Scheme:- It has been suggested that the following localities may be considered:-

(a) Lands near Lalbagh under Siddapur Tank. It is estimated that more than 100 acres are available here.

(b) Lands under the Hessarghatta Tank.

II The extent to be taken up for cultivation.

The Imperial Council of Agricultural Research require that 45 acres should be set apart for this purpose of which 25 acres will be for Apples and the remaining extent for Miscellaneous fruits including Pine apples.

Since Miscellaneous fruits and Pine apples are being experimented on in the Lalbagh and Krishnarajasagara an extent of 30 acres would --- suffice for development of Apple cultivation. The grant made by the Imperial Council of Agricultural Research for maintenance should be asked for this reduced extent.

III. Non-Recurring Expenditure:- to be met by the Government o Mysore.- Excluding buildings etc that are available in the Lalbagh, the net amount required for additional items comes to Rs 49500/- for five years (Vide Statement attached).

Recurring Expenditure .. Rs 20500/-

The Non-recurring Expenditure for the first year will be Rs 45750/-. This has to be provided immediately the scheme is sanctioned, as also the first year's recurring expenditure amounting to Rs 3300/-.

IV. Future of the Scheme at the end of five years.-

The results of the scheme can be judged only at the end of three years and it will be necessary to request the Imperial Council of Agricultural Research to continue the grant for another period of five years. The recurring cost to the Government of Mysore during the -- period of extension will be Rs 5000/- per year assuming that the - Imperial Council of Agricultural Research will continue the scheme; otherwise it will be Rs 14000/- (Vide Statement 2).

V. Receipts from the Scheme:-

The Imperial Council of Agricultural Research require the amount to be credited to their fund. But as a great part of the expenditure has to be met from the State funds, the receipts should go to the Mysore Government, after all the Farm will begin to yield from the end of the third year. The yield is estimated at Rs 5000/- per year after 3 years.

VI Conditions of the grant:-

Cl (7) of the conditions to be observed requires to be modified in view of what is stated in Item V Supra.

-:0:-

Estimate of cost to be met by Government of Mysore.

NON-RECURRING CHARGES.

Sl.No.	Particulars.	Actual contribution including the --- valuation of the buildings etc.	Actual amount required. 1st Year.	2nd Year.	3rd Year.	4th Year.	5th Year.	Remarks.
I.	LAND:(a)30 acres @ Rs.500/-per acre..	15000	15000	..	..	..	..	
2.	BUILDINGS:-							
(a)	Farm Manager's Quarters		..	..	..	..		
(b)	Scientific Assistant's Quarters..	..	..	..	..	..	..	
(c)	Quarters for Menial Staff Watchmen.	1000	1000	..	..	..	..	
(d)	Cattle shed at Lalbagh.. ..	2000	..	..	..	..	..	
(e)	Potting & Grafting shed(Fruit Nursery-Lalbagh)..	5000	..	..	..	..	..	
(f)	Implements Shed.. ..	1000	1000	..	..	..	..	
(g)	Office-(Hortl.School Buildings) ..	10000	..	..	..	..	..	
(h)	Stores-(Barn at the Horticultural Farm).	10000	2000	..	..	..	..	For alteration allowance.
(i)	Laboratory(Bureau of Economic Botany).. - Building	10000	..	..	..	..	..	
3	OTHER ITEMS.							
(a)	Fencing 30 acres ..	2500	2500	..	..	..	..	
(b)	Formation of land, drains, roads, pitting &c.	6000	6000	..	..	..	..	
(c)	Storage tanks, wells etc.	6000	6000	..	..	..	..	
(d)	Pumps with pipe connections..	6000	6000	..	..	..	..	
(e)	2 pairs of Bullocks ..	500	500	..	..	..	..	
(f)	Laboratory equipment ..	2000	2000	..	..	..	..	
(g)	Plants and seeds	6000	3000	1000	1000	500	500	

(h) ~~Tools & Implements~~	1500	750	250	250	..	250	
	Rs 84500	45750	1250	1250	500	750	.. Rs 49500/-

RECURRING CHARGES.

(a) Manure	4500	1500	1000	1000	1000	1000	
(b) Cattle Feed	2000	400	400	400	400	400	
(c) Leave, Travelling Allowances & Provident - Fund.	5000	978	998	944	980	1116	
(d) Electric power and Driver's wages ..	6000	860	1110	1310	1360	1360	
(e) Maintenance of Roads & Buildings ..	1000	200	200	200	200	200	
(f) Unforseen charges ..	2000	400	400	400	400	400	
	20500	3322	4108	4254	4340	4476	
GRAND TOTAL:-	105000/-	49072/-	5358/-	5504/-	4840/-	5226/-	Rs 70000/-

RECEIPTS.

Receipts from 16 acres of Apples ..	NIL	NIL	NIL	~~5000/-~~ NIL.	5000/-	5000/-	.. Rs 10000/-

No. 00353
Enc.

OFFICE OF THE SUPERINTENDENT,
GOVT. GARDENS IN MYSORE,
LAL-BAGH, BANGALORE.

Dated.....21.....August.....1936.

FROM

M. K. SITARAM CHETTY, ESQ., L.Ag.,
~~Offg.~~ Superintendent, Government Gardens in Mysore,
Bangalore.

To

M.Venkatesa Iyengar, Esq., M.A.,
Secretary to the Government of
His Highness the Maharaja of Mysore,
General Department,
Bangalore.

Subject:- Scheme for Fruit cultivation in the Mysore State.

Sir,

With reference to your letter No.7943/G.G. dated 30-6-1936 on the above-mentioned subject calling for a detailed technical - programme of work and other particulars, I have the honour to state that the Scheme as approved by the Imperial Council of Agricultural Research in their letter No. F 341-34A, dated 9-6-1936 proposes an extent of 45 acres to be taken up, of which 25 acres come under -- Apples and 20 acres under Miscellaneous fruit including Pine apple at a total cost not exceeding 46,200/- spread over a period of five years. But since it is found that the provision of Rs 100/- made -- towards maintenance charges per acre by the Imperial Council of --- Agricultural Research is not sufficient it is not possible to take up the 45 acres as approved at present, within the amount sanctioned -- as a sum of Rs 200/- per acre per annum would be the minimum provision required for maintenance. It is therefore proposed to take up the cultivation of Miscellaneous fruits along-with the other Schemes for Mangoes, Citrus and Grapes which have already been drawn up and --- submitted to Government by Mr G.H.Krumbiegel, the then Director of - Horticulture in Mysore. The total extent of the present Scheme will thus be confined to 30 acres of which 25 acres are to be Apples and the remaining 5 acres under Pine apples, in which case the amount of Rs 46,200/- may be sufficient, not including however, the cost of pl

Acres.

III. b. Dosage trials of artificial manures :-
or normal
i. Full/Dose of the Mixture
ii. Half Dose of the Mixture
iii. One-and-half Dose of the Mixture

Plots will be arranged in Strip Method with four replications.

IV. Experiments in Irrigation :-

a. Method of Irrigation :-
Ring Method VS. Furrow Method

b. Period of Irrigation :-
3,6,9 days of intervals.

Plots will be arranged in Strip Method with four replications.

V. Pollination Experiments :-

These experiments will be conducted on the plants in the Varietal plots, half the number of plants being left open for natural pollination and the other half for controlled pollination.

VI. Experiments in Thinning :-

These Experiments will be conducted in the manurial plots.

VII. Reserve plot 2

Total :- 25 acres

PINE APPLE.-

Suckers will be planted in rows 3' apart and 3' in the row taking 144 plants per plot 1 gunta in extent.

I. Varietal Experiments :- 6 varieties will be tested under Latin Square Method.. 1 acre

II. Manurial Experiments :- Same as in Apples on Queen Variety 2

III Irrigation Experiments. 1

IV. Spacing Experiments 1

Total :- 5 acr

GRAND TOTAL :- 30 a

plants, seeds, tools etc, which must be met by the Government of Mysore.

No provision is however made by the Imperial Council of Agricultural Committee in the total sum of Rs 46,200/- for items such as Leave and Travelling Allowances and Provident Fund for the Staff employed on the Scheme. The minimum provision of Rs 5,000/- will be necessary for these items over and above Rs 23,750/- sanctioned by the Imperial Council of Agricultural Research for the Staff and unless the Imperial Council of Agricultural Research agrees to the additional sum, the Government of Mysore will have to provide for the same.

After the fourth year of the Scheme, it will be necessary to arrange for the economic disposal of the fruits produced in the Orchard, for which a carefully thought-out Scheme for marketing will be required. But along with the scheme mentioned in para 1 above, a Scheme comprising of the Erection of a Cold Storage, a Packing Shed, Grading Equipment, Auction Room etc has already been formulated and this will also have to be considered by the Government when the time comes.

The sale proceeds realised from the working of the Fruit Scheme will have to be distributed at the end of each year between the Imperial Council of Agricultural Research and Mysore Government in proportion to the Capital invested.

If the modifications suggested above meet with the approval of the Imperial Council of Agricultural Research, the other conditions mentioned in the letter under reference may be accepted.

In regard to the Site for the Fruit Research Station, a piece of land 30 acres in extent having a gentle slope with a deep loamy soil and sub-soil has been selected in close proximity to the Lalbagh and the Horticultural Experimental Farm with a view to facilitate efficient control and supervision and also easy access for the visitors who are interested in Horticulture. The value of the land has been estimated at Rs 500/- per acre by the Revenue Department. The 30 acres of the orchard would at this rate cost Rs 15000/- as per estimated provision.

The source of water for this orchard would be the three -- existing wells equipped with Pumps of suitable discharging capacit, Due provision for the Storage tank, pumps etc amounting to Rs 10000/ has been made in the Estimate (Vide Appendix A.)

The buildings belonging to the Lalbagh such as the Barn in the Horticultural Farm, Old Herbarium, and Horticultural School and - Bureau of Economic Botany buildings etc can be made use of for the Fruit Research Station, as they are suitable for the purpose. These are shown in Appendix A. A few new buildings such as Sheds for Watchmen and Implements and necessary alterations to other --- buildings have also been provided for in the Estimate to the extent of Rs 4000/-.

Details of the Experiment.

Regarding Experiments, the following scheme is proposed --- tentatively. All the plots will be laid in Latin Square Method or the Strip Method to provide facilities for statistical interpretati of results.-

Details.	Acres.
APPLES.-	
I. Experiments in Stock :-	
a. Raising and selection of local Stock	2
b. Testing of Rome Beauty on ten different- existing ~~stocks~~ imported stocks ..	4
II. Varietal Tests :-	
a. Ten of the most important varieties will be tested under Latin Square Method with ten plants in each plot planted 15'x 15'..	4
b. Preliminary trials : 80 new introductions will be tested in rows with Rome Beauty as ~~check~~ check after every 8 varieties, planting ten plants in each row	5
III. Manurial Experiments :-	
a. Ten manures consisting of bulk manure such as- Sheep manure, Farm-yard Manure and Oil-cake, and artificial manures - N.,P.,K., NP.,PK.,NK.,NPK., will be tried in the - Latin Square Method with ten plants in each - plot of the variety Rome Beauty	5

With regard to the probable date of starting the Scheme, the actual start of acquiring the site with necessary preparation of ground, fencing, purchase of plants etc., will be taken on hand immediately the sanction is received.

Regarding the grant required during the current financial year a sum of Rs-1,500/- only under Staff " will be required if the - Scheme as now modified is sanctioned by the end of September 1936. Considering the fact that the work regarding acquisition and ---- preparation of land and other works of Non-recurring nature will hav to be done practically up to May next, no expenditure would be - required to be met by the Imperial Council of Agricultural Research under " Maintenance and hence no grant is necessary under this he

I have the honour to be

Sir

Your most obedient servant,

Sd/- M.K.Sitaram chetty,

SUPERINTENDENT,
GOVERNMENT GARDENS IN MYSORE.

COPY.

Superintendent
Government Gardens in Mysor

Estimate of cost to be met by Government of Mysore at Lalbagh.

Non-Recurring charges.

(APPENDIX A.)

S.no.	Particulars.	Total construction including the valuation of Buildings &c.	Actual amount required for 5 Years.	Remarks.
1.	Land - 30 acres Private Land -- @ a 800/- per acre ..	15000	15000	
2.	Buildings:-			
a.	Farm Manager's Quarters.			
b.	Scientific Assistant's Quarters.			
c.	Quarters for Menial Staff(Watchman)	1000	1000	
d.	Cattle Shed at Lalbagh ..	2000		
e.	Potting & Grafting shed (Fruit Nursery at Lalbagh) ..	3000	~~1000~~	
f.	Implement Shed ..	1000	1000	
g.	Office (Horticultural School Buildings) ..	10000		
h.	Stores (Barn at the Horticultural Farm)	10000	2000	For alterations.
i.	Laboratory (Bureau of Economic Botany-building)..	10000		
3.	Other Items.-			
a.	Fencing 30 acres ..	2500	2500	
b.	Formation of land, drains, roads, pitting etc..	6000	6000	
c.	Storage tank, wells etc. ..	4000	4000	
d.	Pumps with pipe connections ..	3000	6000	
e.	Bullocks 2 pairs ..	500	500	
f.	Laboratory equipment ..	2000	2000	
g.	Plants, seeds etc. ..	6000	6000	
h.	Im Tools and Implements ..	1500	1500	
		82500	47500	

RECURRING CHARGES.

4.	a. Leave, Travelling Allowance and Provident Fund.	5,000	5,000
	b. Electric Power ..	4,000	4,000
	c. Maintenance of Roads & Buildings etc.	1,000	1,000
	d. Unforseen charges	2,000	2,000
	Total:- Rs.	12,000	12,000
	GRAND TOTAL :-	Rs. 94,500/-	59,500/

SUPERINTENDENT,
GOVERNMENT GARDENS IN MYSORE.

D.O.Letter No. Dated, 28th September 1936 from Mr.H.C. Javaraya, Grand Hotel, Delhi.

I have gone through the letter No.00⁄53 dated 21st August 1936 sent by Mr.Sitarama Chetty to Government and also the letter written in July 1936 jointly by Mr.Sitarama Chetty and Dr.V.K.Badami. The headings of the two letters are worded differently, "Fruit Research Scheme approved by the I.C.A.R." in the first letter and "Scheme for Fruit Cultivation in the Mysore State" in the second one. While the first letter deals with the I.C.of A.R. scheme, the second one mixes it up with other schemes drawn up and submitted to Government by Mr.G.H.Krumbiegel the then Director of Horticulture in Mysore".

Since this is a piece of work with which I was intimately connected, I cannot help going into details mentioned in the letter the first person singular for which I profoundly apologise. I must assure you before proceeding further that my comments are not made in a spirit of cavil and I hope they will be taken in the light in which they are offered when asked for. It is about two years since I have been out of touch with this matter and not having all the relevant papers before me I am unable to deal with certain matters which I wish I could have done.

The second letter is very sketchy and I had therefore to look into the first one for details; the latter has with it estimates for planting and maintaining the orchard, which are not found in the former. The fact that they refer to the "Revised Fruit Research Scheme in Mysore State" does not make any material difference in calculating the working costs, etc.

Under the

Under the heading "Scheme" it is stated that "for the Mysore province mangoes and citrus fruits are very important commercial crops". These are not only important for Mysore State but for the whole of India. It is also said that "I.C. of A.R. has not taken into consideration these important crops of the State". They did take them into consideration but since they had already granted funds for research on these fruits in other centres, they did not think it necessary to have similar work undertaken in Bangalore. When I explained that the other centres had not included certain aspects of work on these fruits, I was told that I might bring up a separate scheme, so that it may not be necessary for the Government of Mysore to meet the whole cost of the proposed experiments on mango, grape and citrus plants. It is essential that experiments on these fruits should be conducted, but that is quite a different matter from the present issue. It is feared that the I.C. of A.R. may "not continue or cease to pay the full amount now sanctioned". That will largely depend on the work carried out in the Research Station but I remember cases where extension of schemes have been sanctioned.

In the second letter it is proposed to exclude the cultivation of miscellaneous fruits from the I.C. of A.R. scheme and to reduce the from 45 to 30 acres which again is altering the sanctioned scheme. It is proposed to acquire land at the rate of -- Rs.500/- per acre which seems very high. The possibility of reducing the cost of cultivation so that

the

21

the area of 45 acres may be brought under cultivation has also been discussed elsewhere under financial aspect. The cost of labour near the city would naturally be excessive.

A sum of Rs.5,000 is said to be necessary for leave, travelling allowance and provident fund. This amount seems to be high. When the men are on temporary service, leave allowances will not be so ghigh as in the case of permanent hands. Ido not think there is much necessity for touring and the provision under T.A. ought to be very little. I do not know ho provident fund charges have been calculated; coolies will be engaged on a temporary basis or better still labour can be arranged on contract or piece work system. This is, however, a matter for the Accounts Department to calculate and I think the amount could have been easily found out of the sum of Rs.4,000 provided under the item "Unforeseen charges" on page 17 of the original printed booklet dealing with the scheme.

It is stated that a "carefully thought-out scheme for marketing will be required". This does not mean that Government should launch an independent scheme entailing large expenditure in the 'erection of a cold storage, a packing shed, grading equipment, auction room etc.' In fact these matters are yet in an experimental stage. Experiments on cold storage have not been concluded in Poona. Meantime the question of Gas Storage which has has better advantages has come in and experiments are about to be started. For auction room and packing shed temporary constructions ought to serve the purpose to start with. Experiments with grading equipment will soon be started and it is no use thinking of grading machinery till it is proved to be advantageous; after all hand grading may be cheaper and just as efficient.

It is stated that the sale proceeds of the orchards should be distributed between I.C. of A.R. and Mysore Govt. in proportion to the capital invested. I do not know whether this condition has been stipulated. I should have thought that the income from the orchards would go to the Govt. of Mysore, and that would come in handy for meeting any additional expenditure. I have referred to this in the last sentence of the penultimate paragraph on page 16 of the printed copy of the scheme.

Without all the material at hand it is difficult to say what exactly has to be done. The main point seems to be that the amount earmarked for maintenance is not sufficient to bring in the area of 45 acres under cultivation. The cultivation of miscellaneous fruits would not cost much. Unfortunately the details of experiments in this section are not mentioned. I do not know if it would have been dealt with on page 7 of the first letter which is however missing. It is suggested that estimates should be made taking the whole area of the orchard into consideration instead of acre by acre. It may then be possible to spread the grant over 45 acres. There is a sum of Rs.2,000/- under contingencies.

In these circumstances it seems desirable to accept the scheme as sanctioned by the I.C. of A.R. unless impossible conditions are laid down. Anyhow from the letter of the Superintendent of Govt. Gardens it can be seen that no amount is required from the I.C. of A.R. this year.

Now I shall deal with the actual working of the scheme. In the second letter it is stated that "a piece of land 30 acres in extent has been selected in close proximity to the Lal Bagh and the Horticultural Farm with a view to facilitate efficient control and supervision and also easy access to the visitors who are interested in Horiticulture". "The source

of water for this orchard would be the three existing wells equipped with pumps of suitable discharging capacity". The actual location of this site is not stated. It is taken that this a different site from what is referred to in the first letter, though both are said to be near the Lal Bagh. The capacity of the pumps may be all right but the question is that of the adequacy of the supply of water about which nothing is stated. This is, however, quite contradictory to what is stated in the first letter viz. "Borehole trials in this area seem to indicate that there is not much water to be tapped even in the lower strata. However good the soil may be and the facilities that are nearby this area one the score of dearth of water alone should be ruled out of consideration". It is stated that there is not enough water for 45 acres. And yet it is recommended that "experiments connected with mangoes, grapes and citrus fruits should be conducted in a site adjoining the Fruit Research Station". Wells were several times dug in different places in the southern block of the Horticultural Farm, which I expect is on a lower level than the proposed site, but water could not be found there. If I remember right the water in the large well in the Sunnakal Farm is brackish.

The value of the land is estimated at Rs.500/- per acre. The same price, if not something higher, would have to be paid in the case of land required for extension, if land is available at all. Any site that is selected must be capable of extension to the fullest limit not only for present needs but also for anticipated future requirements. (I am convinced more than ever that Mysore State has conditions suitable for tremendous expansion of fruit cultivation and before long it ought to be the chief centre of production of fruit for practically the whole of South India). It should

also

also be remembered that labour is very expensive here, the site being so near the city.

The proximity to Lal Bagh and Horticultural Farm are considered to be advantages. Efficient control and supervision are said to be the advantages. Mere frequency of visits does not constitute efficient control; as for supervision it is the man in charge who is responsible for it. Others will have no time for it. When a place is close to the main institution it often happens that the inspecting officer is called back by some visitors who go to Lal Bagh, or to attend to some requisition or other. On the other hand if it is away at some distance, one goes there with a definite purpose and one is able to put in some hours doing useful work. The staff of the existing institutions are not to go and work in the Research Station, otherwise their legitimate work will naturally suffer. There is every likelihood of the Research Staff being told off by the officers to attend to odd jobs beyond the sphere of their own work on account of urgent demands fro many sources which are always present in the case of officers of Government Gardens, to the detriment of work connected with the Research Station. Lal Bagh is a public place and quite a number of people who have nothing to do try to do it there, often trespassing on the time of the staff. This results in loss of time to the officers. The same thing will occur in the case of the Research Station if it is close to Lal Bagh. A fruit garden, particularly when the trees are bearing, is an attraction for every one whether interested in real horticulture or not;

school children will be among interested visitors.Research work must be free disturbance.

One has to remember the number of thefts of crops, that have occured in the Horticultural Farm. Then again the Hosoor road and the ~~xi~~ neighbourhood of Lal Bagh and Sunnakal Farm is well known to be the home of monkeys which are a source of great damage to seedlings, flowers and fruits. They cannot be got rid of from there.

Another advantage claimed for this site is that the buildings such as the barn in the Horticultural Farm, Old Herbarium and Bureau of Economic Botany etc., can be made use of for the research station, as they are suitable for the purpose. It is difficult to see how these buildings which exist at different places will serve the purpose of the Research Station without detriment to the work in the institutions to which they belong. From Appendix A it is seen that the office is to be in the Horticultural School Buildings in the Lal Bagh, the stores in the Barn at the Horticultural Farm and the Laboratory in the Bureau of Economic Botany attached to the Lal Bagh Office. The difficulty of managing work in these places which are at some distance from each other can easily be imagined.

A few new buildings and alterations to other buildings have been suggested at a cost of Rs.4,000. It is not known with what effect the buildings are to under alterations as far as their present utility is concerned. Whether it is necessary to spend large sums of money on contructing new permanent buildings to start with has to be decided.

It is a matter for Government to consider how the buildings which are part of existing Government institutions could be treated as buildings to be provided for the scheme of Research, their valuation (Rs.37,000) being shown under items of non-recurring expenditure by the Government of Mysore. In the case of schemes brought up for consideration here people are generally suspicious that they are for strengthening an existing department or to provide appointments for the men whom the authors of the scheme have in view.

I cannot visualise the site situated near the Lal Bagh and the Horticultural Farm that could be eminently suited for the Research Station in which the cultivation of apples ~~a~~ is the chief work. The area is at the foot of the depression in the ground; mildew attack is likely to be severe. No one has grown apples there, though much of the land is taken up by market gardens for vegetable cultivation.

The atmosphere of a site anywhere near the sewage farm and the cemetery and the crematorium is obviously not suitable for a Research Station for more reasons than one.

It would be very desirable that schemes requiring large areas like the one under reference should be kept well away from the growing city of Bangalore.

The Hesargatta site has been referred to as Saldevanahalli lands, but nothing is stated about the actual selection or the exact situation. From the description of the land it seems to me that it does not include the plots selected by me. The land was

inspected with Messrs. N.Subba Rao and H.F.Marker, Executive Engineers (and Mr.Pillay, their assistant) and I think Mr.Anantaraman too who was then the Deputy Commissioner. Mr. Pillay ought to know the details. Actual plans drawn by the P.W.D. on which the area was marked had been submitted to Government. I attach a rough sketch showing approximately where the plots were situated. The land near the railway may show crops of rocks but I do not think the fruit plots were ever meant to be there. The whole plot is said to be alkaline which is impossible in the case of the plots selected by me. They speak of the river and the bank of a nulla which were nowhere near those plots. And I cannot imagene selecting a land under "heavy growth of casuarina" for opening an orchard. It is possible that in the area selected, there might have been in the lower portions an alkaline plot and a casuarina plantation but that would be outside the experimental plots. I had an ideal of having extra land for cattle and sheep to graze and move about as can be seen from the original scheme. I do not think that the land was at the tail end of the duct channel, though the disadvantage can be overcome by not allowing water or allowing only surplus water to those cultivating crops these lands. It is stated in the letter that "it will supply water by gravitation" but you may see that I had provided for pumps and electric power in my estimates (vide page 17 of booklet) which would not have been necessary had the plots been in a situation where water could be had by gravitation. ~~xx~~ I do not know whether the Saldevanahalli lands referred to in their letter is a later selection. I had not the time to go into the question fully and I cannot say at this distance of time the number of acres of land under soil suitable for apple cultivation. I cannot, however, believe that the whole area I selected was alkaline and that the soil

was not deep enough for fruit plants.

Reference has been made to the necessity of uniformity of soil and sub-soil. In Nature it is not possible to find the same type and depth of soil and sub-soil over an area of 20 acres or more and that is why the different systems of laying out experimental plots are adopted. Moreover the aim should not be to take up exceptionally rich lands but typical representative soils suitable for the cultivation of the particular kinds of the fruit trees under trial. Chemical examination is not everything. "Broadly speaking the physical condition of the soil is more important in fruit production than is its chemical composition, though it should not be inferred that poor soils are preferable to good soils for orchard purposes. Soils that are unproductive from the standpoint of cereal crops are often productive from the standpoint of fruit productions, and the reverse situation often occurs. The soil that is productive in pineapple cultivation may be unproductive in avocado cultivation. The only satisfactory measure of soil productivity is in terms of crop production of the specific plant under consideration" (Fundamentals of fruit production by Gardner, Bradford & Hooker)

I do not know where the necessity was to consider areas under Krishnaraja Sagara and the Irwin Canal Farm near Mandya. They were for obvious reasons out of consideration. If any place should have been though of outside Bangalore, Hassan should have had the preference. That is by the way, however.

Finally it is found that the authors of the report have come across a piece of land in Hasarghatta area near the Rest House. This land had been seen and considered. But it was not chosen .....

as I was given to understand that its acquisition would be a difficult matter as it was in a Jodi Grama and also as it was on a higher level than those plots selected near it on either side of the road leading to the Rest House from the pumping station.

I must deal with the third site - the Grand Valley Estate - mentioned in the letter, though in doing so I shall be in an awkward situation. I feel particularly happy that its criticism which sloppily x inaccurate does not extend over one sentence. I presume the authorities find it satisfactory in all other points except in that it is in an "open valley with no proper communications". It is not known whether they have inspected the site and whether they prefer a closed-in valley or a hill top and whether they think that an open valley is not suitable for an orchard. Many of the best orchards all over are in valleys. It is a distince advantage to locate orchards and other plantations in valleys on account of the protection they get from the prevailing winds which are most damaging both to the trees and their crops - a consideration of vital importance in fruit cultivation. If the slope is such that the plants are protected to a certain extent from western sun as in the case of the Grand Valley, it is a great point in its favour. Sunscorch does a great deal of damage to apple plants. As for lack of proper communication I have only to say that one can drive one's ~~xxxx~~ car into the garden as well as up to the front door of the house. The road is certainly not so good as fine metalled roads but it could easibly be improved at a very little cost. Modesty forbids me from describing all the good points of this property in the way it deserves, but suffice it to say that there are plots where soil

conditions are suited to different kinds of fruit trees, and there is a good supply of water. The surplus water from the three tanks above runs in a channel on one side of the valley. There is perennial supply of water not only in existing wells but in trial wells which were tested. Some of the fields which are already formed have typical soild for apple cultivation. (I have planted apple trees myself. They will not ~~xxxx~~ grow in any kind of soil, however well suited it may be for some other fruit tree.) The plots have such slope as will allow proper drainage. There are already existing fruit and other commercial plants, pineapple included, which yield an income so that the interest on the capital invested is forthcoming. There is great scope for the expansion of the experimental orchards. An experimental station for vegetables can be opened here. (I had in contemplation the drafting of a scheme to be sent to I.C. of A.R. I am not aware of any scheme for research on vegetables, which is also very important. There was an idea of converting the Sunnakal Farm into a Grass Farm giving up the cultivation of vegetables there on account of the danger of its being one of the causes of typhoid fever coming through eating uncooked vegetables grown under sewage water). There is a quarry on the spot from where stone for building purposes may be had. The ~~xxx~~ environments are suitable for a fruit research station. From a landscape point of view it is beautiful and it will be a pleasure to visitors to go there. It is only about five miles from the Lal Bagh. There is a pucca built house with large rooms fitted up with electric lights and also cattle sheds. There are sheep which provide manure most necessary for apple cultivation and the cost of sheep manure is very high. There is an electric pumping installation. Mr. Krumbiegel who went

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Statement V. Pineapples.- cost of pineapples at 8 suckers per rupee, Rs.500 per acre. It is too high. When buying by hundreds and thousands wholesale rates should be quoted. There would be a large number of suckers in the Lal Bagh Fruit Nursery which can be sold at wholesale rates. For ~~xxxx~~ planting three acres about 15,000 suckers are required. Such a large number may not be available. It is therefore desirable to plant one acre in the first year. In the second year suckers will be available from the previous year's plants. Again a sum of Rs.37/8 is put down for manure for an acre of pineapples, after providing the cost of manure elsewhere.

Statement VI. Miscellaneous fruits, -- distance of planting 25' x 25'. It is hoped that this is the average; different fruits require to be planted at different distances. Excavation of pits is charged at 3 as. a cu. ft. whereas in Statement IV it is charged at 8 pits per rupee, the size of the pit is the same. Pears are included here. It is hopless to try to grow pears in

Bangalore. They will not do well.

A detailed technical programme of work has been called for as can be seen from the preamble to the letter In the Advisory Board meeting held in July 1935 it was resolved that a plan of the lay-out of the experimental plots with a technical programme of work should be submitted for approval before the work is started. It is, therefore, necessary that particular care should be bestowed in drawing up the note. I am afraid the information given in the letters about experiments is by no means adequate.

The following are a few observations under "Experiments":-

Apples. 1. Varietal tests.- "Ten of the most important varieties of apples will be tested". Which are those ten varieties? Besides Rome Beauty" I cannot think of more than five varieties which may be considered as even fairly good among the numerous varieties tried on a decen scale in Bangalore.

The number of plants of each variety under different experiments must be as large as possible. Flourishing apple trees die with little notice on account of collar rot and whiteants attacking the roots. On hasto be prepared for this contingency. The inherent variation of trees should also be taken into consideration in this connection.

A note of warning is necessary in regard to the selection of apple plants. It is stated that plants from Europe and America will be ordered. What is said to be hardy in the temperate climates will not be hardy here. The selection of the varieties of apples should require the greatest care. The descriptions in the catalogues are apt to be misunderstood. Plants from South Africa

may also be included in the varietal tests.

Pollination experiments require much thought. Experiments have already been conducted in other countries and their results indicate that best results are obtained when particular varieties are pollinated with particular other varieties. This may serve as a guide in drawing up the scheme of experiments under this head.

A complete redrafting of the note on experiments is suggested.

Pineapples. 1. Varietal Experiments. - There are a few more than 6 varieties and they may be provided for

2. Irrigation Experiments.- "same as in apple". No one will think of irrigating pineapple plants in the ring system which is practised in the case of apple trees.

About the receipts it is said in the first letter that they would amount to "anywhere from -- Rs.52,000 to Rs.74,000, "while the note attached to the second letter shows the figure Rs.15,900. I doubt if the cultivation of miscellaneous fruits on 17 acres would mean all this difference, particularly when many of them are not likely to yield much in five years.

Finally about marketing the produce it is stated that the "Government of Mysore may make arrangements with the Department of Industries and Commerce. Otherwise adequate space will have to be provided for storing over a hundred tons of fruits in cool airy store house". No doubt systematic arrangements for marketing would have to be made, but the 100 tons of fruits will not come in all at once.

I hoep you will not mind the length of this note. I thought I might make matters as clear as I could.

I have herewith returned the two letters you had left with me.

Wishing every success to the Fruit Research Station.

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D.O.Letter No. Dated, 28th September 1936 from Mr.H.C. Javaraya, Grand Hotel, Delhi.

I have gone through the letter No.00353 dated 21st August 1936 sent by Mr.Sitarama Chetty to Government and also the letter written in July 1936 jointly by Mr.Sitarama Chetty and Dr.V.K.Badami. The headings of the two letters are worded differently, "Fruit Research Scheme approved by the I.C.A.R." in the first letter and "Scheme for Fruit Cultivation in the Mysore State" in the second one. While the first letter deals with the I.C.of A.R. scheme, the second one mixes it up with other schemes drawn up and submitted to Government by Mr.G.H.Krumbiegel the then Director of Horticulture in Mysore".

Since this is a piece of work with which I was intimately connected, I cannot help going into details mentioned in the letter the first person singular for which I profoundly apologise. I must assure you before proceeding further that my comments are not made in a spirit of cavil and I hope they will be taken in the light in which they are offered when asked for. It is about two years since I have been out of touch with this matter and not having all the relevant papers before me I am unable to deal with certain matters which I wish I could have done.

The second letter is very sketchy and I had therefore to look into the first one for details; the latter has with it estimates for planting and maintaining the orchard, which are not found in the former. The fact that they refer to the "Revised Fruit Research Scheme in Mysore State" does not make any material difference in calculating the working costs, etc.

Under the

Under the heading "Scheme" it is stated that "for the Mysore province mangoes and citrus fruits are very important commercial crops". These are not only important for Mysore State but for the whole of India. It is also said that "I.C. of A.R. has not taken into consideration these important crops of the State". They did take them into consideration but since they had already granted funds for research on these fruits in other centres, they did not think it necessary to have similar work undertaken in Bangalore. When I explained that the other centres had not included certain aspects of work on these fruits, I was told that I might bring up a separate scheme, so that it may not be necessary for the Government of Mysore to meet the whole cost of the proposed experiments on mango, grape and citrus plants. It is essential that experiments on these fruits should be conducted, but that is quite a different matter from the present issue. It is feared that the I.C. of A.R. may "not continue or cease to pay the full amount now sanctioned". That will largely depend on the work carried out in the Research Station but I remember cases where extension of schemes have been sanctioned.

In the second letter it is proposed to exclude the cultivation of miscellaneous fruits from the I.C. of A.R. scheme and to reduce the from 45 to 30 acres which again is altering the sanctioned scheme. It is proposed to acquire land at the rate of -- Rs.500/- per acre which seems very high. The possibility of reducing the cost of cultivation so that

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the area of 45 acres may be brought under cultivation has also been discussed elsewhere under financial aspect. The cost of labour near the city would naturally be excessive.

A sum of Rs.5,000 is said to be necessary for leave, travelling allowance and provident fund. This amount seems to be high. When the men are on temporary service, leave allowances will not be so ghigh as in the case of permanent hands. Ido not think there is much necessity for touring and the provision under T.A. ought to be very little. I do not know ho provident fund charges have been calculated. coolies will be engaged on a temporary basis or better still labour can be arranged on contract or piece work system. This is, however, a matter for the Accounts Department to calculate and I think the amount could have been easily found out of the sum of Rs.4,000 provided under the item "Unforeseen charges" on page 17 of the original printed booklet dealing with the scheme.

It is stated that a "carefully thought-out scheme for marketing will be required". This does not mean that Government should launch an independent scheme entailing large expenditure in the 'erection of a cold storage, a packing shed, grading equipment, auction room etc.' In fact these matters are yet in an experimental stage. Experiments on cold storage have not been concluded in Poona. Meantime the question of Gas Storage which has has better advantages has come in and experiments are about to be started. For auction room and packing shed temporary constructions ought to serve the purpose to start with. Experiments with grading equipment will soon be started and it is no use thinking of grading machinery till it is proved to be advantageous; after all hand grading may be cheaper and just as efficient.

It is stated that the sale proceeds of the orchards should be distributed between I.C. of A.R. and Mysore Govt. in proportion to the capital invested. I do not know whether this condition has been stipulated. I should have thought that the income from the orchards would go to the Govt. of Mysore, and that would come in handy for meeting any additional expenditure. I have referred to this in the last sentence of the penultimate paragraph on page 16 of the printed copy of the scheme.

Without all the material at hand it is difficult to say what exactly has to be done. The main point seems to be that the amount earmarked for maintenance is not sufficient to bring in the area of 45 acres under cultivation. The cultivation of miscellaneous fruits would not cost much. Unfortunately the details of experiments in this section are not mentioned. I do not know if it would have been dealt with on page 7 of the first letter which is however missing. It is suggested that estimates should be made taking the whole area of the orchard into consideration instead of acre by acre. It may then be possible to spread the grant over 45 acres. There is a sum of Rs.2,000/- under contingencies.

In these circumstances it seems desirable to accept the scheme as sanctioned by the I.C. of A.R. unless impossible conditions are laid down. Anyhow from the letter of the Superintendent of Govt. Gardens it can be seen that no amount is required from the I.C. of A.R. this year.

Now I shall deal with the actual working of the scheme. In the second letter it is stated that "a piece of land 30 acres in extent has been selected in close proximity to the Lal Bagh and the Horticultural Farm with a view to facilitate efficient control and supervision and also easy access to the visitors who are interested in Horiticulture". "The source

of water for this orchard would be the three existing wells equipped with pumps of suitable discharging capacity". The actual location of this site is not stated. It is taken that this a different site from what is referred to in the first letter, though both are said to be near the Lal Bagh. The capacity of the pumps may be all right but the question is that of the adequacy of the supply of water about which nothing is stated. This is, however, quite contradictory to what is stated in the first letter viz. "Borehole trials in this area seem to indicate that there is not much water to be tapped even in the lower strata. However good the soil may be and the facilities that are nearby this area one the score of dearth of water alone should be ruled out of consideration". It is stated that there is not enough water for 45 acres. And yet it is recommended that "experiments connected with mangoes, grapes and citrus fruits should be conducted in a site adjoining the Fruit Research Station". Wells were several times dug in different places in the southern block of the Horticultural Farm, which I expect is on a lower level than the proposed site, but water could not be found there. If I remember right the water in the large well in the Sunnakal Farm is brackish.

The value of the land is estimated at Rs.500/- per acre. The same price, if not something higher, would have to be paid in the case of land required for extension, if land is available at all. Any site that is selected must be capable of extension to the fullest limit not only for present needs but also for anticipated future requirements. (I am convinced more than ever that Mysore State has conditions suitable for tremendous expansion of fruit cultivation and before long it ought to be the chief centre of production of fruit for practically the whole of South India). It should

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also be remembered that labour is very expensive here, the site being so near the city.

The proximity to Lal Bagh and Horticultural Farm are considered to be advantages. Efficient control and supervision are said to be the advantages. Mere frequency of visits does not constitute efficient control; as for supervision it is the man in charge who is responsible for it. Others will have no time for it. When a place is close to the main institution it often happens that the inspecting officer is called back by some visitors who go to Lal Bagh, or to attend to some requisition or other. On the other hand if it is away at some distance, one goes there with a definite purpose and one is able to put in some hours doing useful work. The staff of the existing institutions are not to go and work in the Research Station, otherwise their legitimate work will naturally suffer. There is every likelihood of the Research Staff being told off by the officers to attend to odd jobs beyond the sphere of their own work on account of urgent demands fro many sources which are always present in the case of officers of Government Gardens, to the detriment of work connected with the Research Station. Lal Bagh is a public place and quite a number of people who have nothing to do try to do it there, often trespassing on the time of the staff. This results in loss of time to the officers. The same thing will occur in the case of the Research Station if it is close to Lal Bagh. A fruit garden, particularly when the trees are bearing, is an attraction for every one whether interested in real horticulture or not;

school children will be among interested visitors.Research work must be free disturbance.

One has to remember the number of thefts of crops, that have occured in the Horticultural Farm. Then again the Hosoor road and the ni neighbourhood of Lal Bagh and Sunnakal Farm is well known to be the home of monkeys which are a source of great damage to seedlings, flowers and fruits. They cannot be got rid of from there.

Another advantage claimed for this site is that the buildings such as the barn in the Horticultural Farm, Old Herbarium and Bureau of Economic Botany etc., can be made use of for the research station, as they are suitable for the purpose. It is difficult to see how those buildings which exist at different places will serve the purpose of the Research Station without detriment to the work in the institutions to which they belong. From Appendix A it is seen that the office is to be in the Horticultural School Buildings in the Lal Bagh, the stores in the Barn at the Horticultural Farm and the Laboratory in the Bureau of Economic Botany attached to the Lal Bagh Office. The difficulty of managing work in these places which are at some distance from each other can easily be imagined.

A few new buildings and alterations to other buildings have been suggested at a cost of Rs.4,000. It is not known with what effect the buildings are to under alterations as far as their present utility is concerned. Whether it is necessary to spend large sums of money on contructing new permanent buildings to start with has to be decided.

It is a matter for Government to consider how the buildings which are part of existing Government institutions could be treated as buildings to be provided for the scheme of Research, their valuation (Rs.37,000) being shown under items of non-recurring expenditure by the Government of Mysore. In the case of schemes brought up for consideration here people are generally suspicious that they are for strengthening an existing department or to provide appointments for the men whom the authors of the scheme have in view.

I cannot visualise the site situated near the Lal Bagh and the Horticultural Farm that could be eminently suited for the Research Station in which the cultivation of apples ~~a~~ is the chief work. The area is at the foot of the depression in the ground; mildew attack is likely to be severe. No one has grown apples there, though much of the land is taken up by market gardens for vegetable cultivation.

The atmosphere of a site anywhere near the sewage farm and the cemetery and the crematorium is obviously not suitable for a Research Station for more reasons than one.

It would be very desirable that schemes requiring large areas like the one under reference should be kept well away from the growing city of Bangalore.

The Hesargatta site has been referred to as Saldevanahalli lands, but nothing is stated about the actual selection or the exact situation. From the description of the land it seems to me that it does not include the plots selected by me. The land was

inspected with Messrs. N.Subba Rao and H.F.Marker, Executive Engineers (and Mr.Pillay, their assistant) and I think Mr.Anantaraman too who was then the Deputy Commissioner. Mr. Pillay ought to know the details. Actual plans drawn by the P.W.D. on which the area was marked had been submitted to Government. I attach a rough sketch showing approximately where the plots were situated. The land near the railway may show crops of rocks but I do not think the fruit plots were ever meant to be there. The whole plot is said to be alkaline which is impossible in the case of the plots selected by me. They speak of the river and the bank of a nulla which were nowhere near those plots. And I cannot imagene selecting a land under "heavy growth of casuarina" for opening an orchard. It is possible that in the area selected, there might have been in the lower portions an alkaline plot and a casuarina plantation but that would be outside the experimental plots. I had an ideal of having extra land for cattle and sheep to graze and move about as can be seen from the original scheme. I do not think that the land was at the tail end of the duct channel, though the disadvantage can be overcome by not allowing water or allowing only surplus water to those cultivating crops these lands. It is stated in the letter that "it will supply water by gravitation", but you may see that I had provided for pumps and electric power in my estimates (vide page 17 of booklet) which would not have been necessary had the plots been in a situation where water could be had by gravitation. ~~kk~~ I do not know whether the Saldevanahalli lands referred to in their letter is a later selection. I had not the time to go into the question fully and I cannot say at this distance of time the number of acres of land under soil suitable for apple cultivation. I cannot, however, believe that the whole area I selected was alkaline and that the soil

was not deep enough for fruit plants.

Reference has been made to the necessity of uniformity of soil and sub-soil. In Nature it is not possible to find the same type and depth of soil and sub-soil over an area of 20 acres or more and that is why the different systems of laying out experimental plots are adopted. Moreover the aim should not be to take up exceptionally rich lands but typical representative soils suitable for the cultivation of the particular kinds of the fruit trees under trial. Chemical examination is not everything. "Broadly speaking the physical condition of the soil is more important in fruit production than is its chemical composition, though it should not be inferred that poor soils are preferable to good soils for orchard purposes. Soils that are unproductive from the standpoint of cereal crops are often productive from the standpoint of fruit productions, and the reverse situation often occurs. The soil that is productive in pineapple cultivation may be unproductive in avocado cultivation. The only satisfactory measure of soil productivity is in terms of crop production of the specific plant under consideration". (Fundamentals of fruit production by Gardner, Bradford & Hooker).

I do not know where the necessity was to consider areas under Krishnaraja Sagara and the Irwin Canal Farm near Mandya. They were for obvious reasons out of consideration. If any place should have been though of outside Bangalore, Hassan should have had the preference. That is by the way, however.

Finally it is found that the authors of the report have come across a piece of land in Hasarghatta area near the Rest House. This land had been seen and considered. But it was not chosen .....

as I was given to understand that its acquisition would be a difficult matter as it was in a Jodi Grama and also as it was on a higher level than those plots selected near it on either side of the road leading to the Rest House from the pumping station.

I must deal with the third site - the Grand Valley Estate - mentioned in the letter, though in doing so I shall be in an awkward situation. I feel particularly happy that its criticism which sloppily ~~x~~ inaccurate does not extend over one sentence. I presume the authorities find it satisfactory in all other points except in that it is in an "open valley with no proper communications". It is not known whether they have inspected the site and whether they prefer a closed-in valley or a hill top and whether they think that an open valley is not suitable for an orchard. Many of the best orchards all over are in valleys. It is a distince advantage to locate orchards and other plantations in valleys on account of the protection they get from the prevailing winds which are most damaging both to the trees and their crops - a consideration of vital importanc in fruit cultivation. If the slope is such that the plants are protected to a certain extent from western sun as in the case of the Grand Valley, it is a great point in its favour. Sunscorch does a great deal of damage to apple plants. As for lack of proper communication I have only to say that one can drive one's ~~xxxx~~ car into the garden as well as up to the front door of the house. The road is certainly not so good as fine metalled roads but it could easibly be improved at a very little cost. Modesty forbids me from describing all the good points of this property in the way it deserves, but suffice it to say that there are plots where soil

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I have herewith returned the two letters you had left with me.

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D.O.Letter No. Dated, 28th September 1936 from Mr.M.C. Javarsya, Grand Hotel, Delhi.

61

I have gone through the letter No.00/53 dated 21st August 1936 sent by Mr.Sitarama Chetty to Government and also the letter written in July 1936 jointly by Mr.Sitarama Chetty and Dr.V.K.Badami. The headings of the two letters are worded differently, "Fruit Research Scheme approved by the I.C.A.R." in the first letter and "Scheme for Fruit Cultivation in the Mysore State" in the second one. While the first letter deals with the I.C.of A.R. scheme, the second one mixes it up with other schemes drawn up and submitted to Government by Mr.G.M.Krumbiegel the then Director of Horticulture in Mysore".

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the area of 45 acres may be brought under cultivation has also been discussed elsewhere under financial aspect. The cost of labour near the city would naturally be excessive.

A sum of Rs.5,000 is said to be necessary for leave, travelling allowance and provident fund. This amount seems to be high. When the men are on temporary service, leave allowances will not be so ghigh as in the case of permanent hands. Ido not think there is much necessity for touring and the provision under T.A. ought to be very little. I do not know ho provident fund charges have been calculated; coolies will be engaged on a temporary basis or better still labour can be arranged on contract or piece work system. This is, however, a matter for the Accounts Department to calculate and I think the amount could have been easily found out of the sum of Rs.4,000 provided under the item "Unforeseen charges" on page 17 of the original printed booklet dealing with the scheme.

It is stated that a "carefully thought-out scheme for marketing will be required". This does not mean that Government should launch an independent scheme entailing large expenditure in the 'erection of a cold storage, a packing shed, grading equipment, auction room etc.' In fact these matters are yet in an experimental stage. Experiments on cold storage have not been concluded in Poona. Meantime the question of Gas Storage which has has better advantages has come in and experiments are about to be started. For auction room and packing shed temporary constructions ought to serve the purpose to start with. Experiments with grading equipment will soon be started and it is no use thinking of grading machinery till it is proved to be advantageous; after all hand grading may be cheaper and just as efficient.

It is stated that the sale proceeds of the orchards should be distributed between I.C. of A.R. and Mysore Govt. in proportion to the capital invested. I do not know whether this condition has been stipulated. I should have thought that the income from the orchards would go to the Govt. of Mysore, and that would come in handy for meeting any additional expenditure. I have referred to this in the last sentence of the penultimate paragraph on page 16 of the printed copy of the scheme.

Without all the material at hand it is difficult to say what exactly has to be done. The main point seems to be that the amount earmarked for maintenance is not sufficient to bring in the area of 45 acres under cultivation. The cultivation of miscellaneous fruits would not cost much. Unfortunately the details of experiments in this section are not mentioned. I do not know if it would have been dealt with on page 7 of the first letter which is however missing. It is suggested that estimates should be made taking the whole area of the orchard into consideration instead of acre by acre. It may then be possible to spread the grant over 45 acres. There is a sum of Rs.2,000/- under contingencies.

In these circumstances it seems desirable to accept the scheme as sanctioned by the I.C. of A.R. unless impossible conditions are laid down. Anyhow from the letter of the Superintendent of Govt. Gardens it can be seen that no amount is required from the I.C. of A.R. this year.

Now I shall deal with the actual working of the scheme. In the second letter it is stated that "a piece of land 30 acres in extent has been selected in close proximity to the Lal Bagh and the Horticultural Farm with a view to facilitate efficient control and supervision and also easy access to the visitors who are interested in Horiticulture". "The source

of water for this orchard would be the three existing wells equipped with pumps of suitable discharging capacity". The actual location of this site is not stated. It is taken that this a different site from what is referred to in the first letter, though both are said to be near the Lal Bagh. The capacity of the pumps may be all right but the question is that of the adequacy of the supply of water about which nothing is stated. This is, however, quite contradictory to what is stated in the first letter viz. "Borehole trials in this area seem to indicate that there is not much water to be tapped even in the lower strata. However good the soil may be and the facilities that are nearby this area one the score of dearth of water alone should be ruled out of consideration". It is stated that there is not enough water for 45 acres. And yet it is recommended that "experiments connected with mangoes, grapes and citrus fruits should be conducted in a site adjoining the Fruit Research Station". Wells were several times dug in different places in the southern block of the Horticultural Farm, which I expect is on a lower level than the proposed site, but water could not be found there. If I remember right the water in the large well in the Gunnakal Farm is brackish.

The value of the land is estimated at Rs.500/- per acre. The same price, if not something higher, would have to be paid in the case of land required for extension, if land is available at all. Any site that is selected must be capable of extension to the fullest limit not only for present needs but also for anticipated future requirements. (I am convinced more than ever that Mysore State has conditions suitable for tremendous expansion of fruit cultivation and before long it ought to be the chief centre of production of fruit for practically the whole of South India). It should

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also be remembered that labour is very expensive here, the site being so near the city.

The proximity to Lal Bagh and Horticultural Farm are considered to be advantages. Efficient control and supervision are said to be the advantages. Mere frequency of visits does not constitute efficient control; as for supervision it is the man in charge who is responsible for it. Others will have no time for it. When a place is close to the main institution it often happens that the inspecting officer is called back by some visitors who go to Lal Bagh, or to attend to some requisition or other. On the other hand if it is away at some distance, one goes there with a definite purpose and one is able to put in some hours doing useful work. The staff of the existing institutions are not to go and work in the Research Station, otherwise their legitimate work will naturally suffer. There is every likelihood of the Research Staff being told off by the officers to attend to odd jobs beyond the sphere of their own work on account of urgent demands fro many sources which are always present in the case of officers of Government Gardens, to the detriment of work connected with the Research Station. Lal Bagh is a public place and quite a number of people who have nothing to do try to do it there, often trespassing on the time of the staff. This results in loss of time to the officers. The same thing will occur in the case of the Research Station if it is close to Lal Bagh. A fruit garden, particularly when the trees are bearing, is an attraction for every one whether interested in real horticulture or not;

school children will be among interested visitors. Research work must be free disturbance.

One has to remember the number of thefts of crops, that have occured in the Horticultural Farm. Then again the Hosoor road and the ~~xi~~ neighbourhood of Lal Bagh and Sunnakal Farm is well known to be the home of monkeys which are a source of great damage to seedlings, flowers and fruits. They cannot be got rid of from there.

Another advantage claimed for this site is that the buildings such as the barn in the Horticultural Farm, Old Herbarium and Bureau of Economic Botany etc., can be made use of for the research station, as they are suitable for the purpose. It is difficult to see how those buildings which exist at different places will serve the purpose of the Research Station without detriment to the work in the institutions to which they belong. From Appendix A it is seen that the office is to be in the Horticultural School Buildings in the Lal Bagh, the stores in the Barn at the Horticultural Farm and the Laboratory in the Bureau of Economic Botany attached to the Lal Bagh Office. The difficulty of managing work in these places which are at some distance from each other can easily be imagined.

A few new buildings and alterations to other buildings have been suggested at a cost of Rs.4,000. It is not known with what effect the buildings are to under alterations as far as their present utility is concerned. Whether it is necessary to spend large sums of money on contructing new permanent buildings to start with has to be decided.

It is a matter for Government to consider how the buildings which are part of existing Government institutions could be treated as buildings to be provided for the scheme of Research, their valuation (Rs.37,000) being shown under items of non-recurring expenditure by the Government of Mysore. In the case of schemes brought up for consideration here people are generally suspicious that they are for strengthening an existing department or to provide appointments for the men whom the authors of the scheme have in view.

I cannot visualise the site situated near the Lal Bagh and the Horticultural Farm that could be eminently suited for the Research Station in which the cultivation of apples & is the chief work. The area is at the foot of the depression in the ground; mildew attack is likely to be severe. No one has grown apples there, though much of the land is taken up by market gardens for vegetable cultivation.

The atmosphere of a site anywhere near the sewage farm and the cemetery and the crematorium is obviously not suitable for a Research Station for more reasons than one.

It would be very desirable that schemes requiring large areas like the one under reference should be kept well away from the growing city of Bangalore.

The Hesargatta site has been referred to as Saldevanahalli lands, but nothing is stated about the actual selection or the exact situation. From the description of the land it seems to me that it does not include the plots selected by me. The land was

inspected with Messrs. N.Subba Rao and H.F.Barker, Executive Engineers (and Mr.Pillay, their assistant) and I think Mr.Anantaraman too who was then the Deputy Commissioner. Mr. Pillay ought to know the details. Actual plans drawn by the P.W.D. on which the area was marked had been submitted to Government. I attach a rough sketch showing approximately where the plots were situated. The land near the railway may show crops of rocks but I do not think the fruit plots were ever meant to be there. The whole plot is said to be alkaline which is impossible in the case of the plots selected by me. They speak of the river and the bank of a nulla which were nowhere near these plots. And I cannot imagene selecting a land under "heavy growth of casuarina" for opening an orchard. It is possible that in the area selected, there might have been in the lower portions an alkaline plot and a casuarina plantation but that would be outside the experimental plots. I had an ideal of having extra land for cattle and sheep to graze and move about as can be seen from the original scheme. I do not think that the land was at the tail end of the duct channel, though the disadvantage can be overcome by not allowing water or allowing only surplus water to those cultivating crops these lands. It is stated in the letter that "it will supply water by gravitation", but you may see that I had provided for pumps and electric power in estimates (vide page 17 of booklet) which would not have been necessary had the plots been in a situation where water could be had by gravitation. I do not know whether the Saldevanahalli lands referred to in the letter is a later selection. I had not the time into the question fully and I cannot say at this of time the number of acres of land under soil for apple cultivation. I cannot, however, bel the whole area I selected was alkaline and th

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was not deep enough for fruit plants.

Reference has been made to the necessity of uniformity of soil and sub-soil. In Nature it is not possible to find the same type and depth of soil and sub-soil over an area of 20 acres or more and that is why the different systems of laying out experimental plots are adopted. Moreover the aim should not be to take up exceptionally rich lands but typical representative soils suitable for the cultivation of the particular kinds of the fruit trees under trial. Chemical examination is not everything. "Broadly speaking the physical condition of the soil is more important in fruit production than is its chemical composition, though it should not be inferred that poor soils are preferable to good soils for orchard purposes. Soils that are unproductive from the standpoint of cereal crops are often productive from the standpoint of fruit productions, and the reverse situation often occurs. The soil that is productive in pineapple cultivation may be unproductive in avocado cultivation. The only satisfactory measure of soil productivity is in terms of crop production of the specific plant under consideration". (Fundamentals of fruit production by Gardner, Bradford & Hooker).

I do not know where the necessity was to consider areas under Krishnaraja Sagara and the Irwin Canal Farm near Mandya. They were for obvious reasons out of consideration. If any place should have been though of outside Bangalore, Hassan should have had the preference. That is by the way, however.

Finally it is found that the authors of the report have come across a piece of land in Hasarghatta area near the Rest House. This land had been seen and considered. But it was not chosen .....

as I was given to understand that its acquisition would be a difficult matter as it was in a Jodi Gramma and also as it was on a higher level than those plots selected near it on either side of the road leading to the Rest House from the pumping station.

I must deal with the third site - the Grand Valley Estate - mentioned in the letter, though in doing so I shall be in an awkward situation. I feel particularly happy that its criticism which sloppily x inaccurate does not extend over one sentence. I presume the authorities find it satisfactory in all other points except in that it is in an "open valley with no proper communications". It is not known whether they have inspected the site and whether they prefer a clossed-in valley or a hill top and whether they think that an open valley is not suitable for an orchard. Many of the best orchards all over are in valleys. It is a distince advantage to locate orchards and other plantations in valleys on account of the protection they get from the prevailing winds which are most damaging both to the trees and their crops - a consideration of vital importan in fruit cultivation. If the slope is such that the plants are protected to a certain extent from western sun as in the case of the Grand Valley, it is a great point in its favour. Sunscorch does a great deal of damage to apple plants. As for lack of proper communication I have only to say that one can drive one's exxx fx car into the garden as well as up to the front door of the house. The road is certainly not so good as fine metalled roads but it could easibly be improved at a very little cost. Modesty forbids me from describing all the good points of this property in the way it deserves, but suffice it to say that there are plots where soil

conditions are suited to different kinds of fruit trees, and there is a good supply of water. The surplus water from the three tanks above runs in a channel on one side of the valley. There is perennial supply of water not only in existing wells but in trial wells which were tested. Some of the fields which are already formed have typical soild for apple cultivation. (I have planted apple trees myself. They will not ~~xxxx~~ grow in any kind of soil however well suited it may be for some other fruit tree.) The plots have such slope as will allow proper drainage. There are already existing fruit and other commercial plants, pineapple included, which yield an income so that the interest on the capital invested is forthcoming. There is great scope for the expansion of the experimental orchards. An experimental station for vegetables can be opened here. (I had in contemplation the drafting of a scheme to be sent to I.C. of A.R. I am not aware of any scheme for research on vegetables, which is also very important. There was an idea of converting the Sunnakal Farm into a Grass Farm giving up the cultivation of vegetables there on account of the danger of its being one of the causes of typhoid fever coming through eating uncooked vegetables grown under sewage water). There is a quarry on the spot from where stone for building purposes may be had. The ~~xxx~~ environments are suitable for a fruit research station. From a landscape point of view it is beautiful and it will be a pleasure to visitors to go there. It is only about five miles from the Lal Bagh. There is a pucca built house with large rooms fitted up with electric lights and also cattle sheds. There are sheep which provide manure most necessary for apple cultivation and the cost of sheep manure is very high. There is an electric pumping installation. Mr. Krumbiegel who went

round the place with me praised it much and said that he was goint to place before the Government a true description of each of the sites and leave the choice to them. Please let me assure you that I have not said all this with any personal motive of gain. I would have ~~skxd~~ said the same-nay much more-- had it belonged to some one else. A lot of points should be considered in the working of an orchard, not merely a frew general principles. Small details either make or mar the success of any horticultural industry as Mr.Krumbiegel used to say. If the Govt. takes either the whole or a part of this estate, it will give me much pleasure in the idea that the Research Station would be situated on a suitable land on the selection and the working of which I had personally bestowed much attention. If on the other hand you do not choose to take it, it does not matter. I should, however, be most unhappy if a place which is not well situated for the purpose of the Research Station, in the cause of which I have striven hard, is selected. But I am certain that the Government of Mysore will not do so, otherwise things would have been settled by this time. I must here take the opportunity of offering my thinks to you for having given me the privelege of offering my opinion in the matter.

Coming now to the financial aspect of the scheme, the second letter which has taken into account the working of only 30 acres as against 45 acres as sanctioned by the I.C. of A.R. provides only two statements showing the expenditure to be met by the Government of Mysore and no details showing the spread of the amount over the period of five years are available. Since it is necessary to take the area of 45 acres the estimates in the first letter have to be taken into consideration.

I think it will be possible to reduce the expenditure so that the whole area of 45 acres may be taken up. The old estimates prepared by me have been so much battered about that it is not possible now to revise the estimates. I have made some notes on the statements attached to the letter. The first page on which the estimates are dealt with, that is page No.7 of the letter is unfortunately missing as stated before. It is stated that "the scheme with the alterations now suggested by us will work up to a total cost of Rs.1,69,919 out of which the I.C. of A.R. will provide Rs.46,200 and the contribution of the Government of Mysore will be Rs.1,23,719". This sum to be provided by you is far too high. It is stated that the difference in the allotment for labour is Rs.3,755 which is not much after all. The estimates seem to be based, on the calculation made on each acre. If the whole area of 45 acres is taken into consideration and items which are common to all sections of the orchard are considered together the cost of labour and cultivation could be reduced. Certain types of labour x such as trenching, pitting, etc. may be arranged to be got done on contract basis instead of on daily or monthly wages. An experimental orchard should not only aim at conducting the necessary experiments but also demonstrating to orchardists the most economical method of planting and maintaining an orchard. A few observations are made on some of the items of expenditure.

Statement I. (1) Lands have to be paid for in any case; the cost will depend on the situation.

(2) As for buildings it is a case of estimating their value if they are already there. Otherwise cheap structures may be put up, and in the case of quarters, house rents may, if necessary, be given and the staff may find accommodation as near as possible to the place of work.

(3) Equipment.- Buildings should not be mentioned under this heading when there is a separate section for it. Formation of land should also be separated.

Statement II. For establishment a sum of Rs.36,414 is put down; if I remember right I.C. of A.R. sanctioned Rs.26,000 and odd, which was accepted. Bullocks should no be under recurring expenditure.

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D.O.Letter No. Dated, 28th September 1936 from Mr.K.C. Jayaraya, Grand Hotel, Delhi.

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the area of 45 acres may be brought under cultivation has also been discussed elsewhere under financial aspect. The cost of labour near the city would naturally be excessive.

A sum of Rs.5,000 is said to be necessary for leave, travelling allowance and provident fund. This amount seems to be high. When the men are on temporary service, leave allowances will not be so ghigh as in the case of permanent hands. Ido not think there is much necessity for touring and the provision under T.A. ought to be very little. I do not know ho provident fund charges have been calculated; coolies will be engaged on a temporary basis or better still labour can be arranged on contract or piece work system. This is, however, a matter for the Accounts Department to calculate and I think the amount could have been easily found out of the sum of Rs.4,000 provided under the item "Unforeseen charges" on page 17 of the original printed booklet dealing with the scheme.

It is stated that a "carefully thought-out scheme for marketing will be required". This does not mean that Government should launch an independent scheme entailing large expenditure in the 'erection of a cold storage, a packing shed, grading equipment, auction room etc.' In fact these matters are yet in an experimental stage. Experiments on cold storage have not been concluded in Poona. Meantime the question of Gas Storage which has has better advantages has come in and experiments are about to be started. For auction room and packing shed temporary constructions ought to serve the purpose to start with. Experiments with grading equipment will soon be started and it is no use thinking of grading machinery till it is proved to be advantageous; after all hand grading may be cheaper and just as efficient.

It is stated that the sale proceeds of the orchards should be distributed between I.C. of A.R. and Mysore Govt. in proportion to the capital invested. I do not know whether this condition has been stipulated. I should have thought that the income from the orchards would go to the Govt. of Mysore, and that would come in handy for meeting any additional expenditure. I have referred to this in the last sentence of the penultimate paragraph on page 16 of the printed copy of the scheme.

Without all the material at hand it is difficult to say what exactly has to be done. The main point seems to be that the amount earmarked for maintenance is not sufficient to bring in the area of 45 acres under cultivation. The cultivation of miscellaneous fruits would not cost much. Unfortunately the details of experiments in this section are not mentioned. I do not know if it would have been dealt with on page 7 of the first letter which is however missing. It is suggested that estimates should be made taking the whole area of the orchard into consideration instead of acre by acre. It may then be possible to spread the grant over 45 acres. There is a sum of Rs.2,000/- under contingencies.

In these circumstances it seems desirable to accept the scheme as sanctioned by the I.C. of A.R. unless impossible conditions are laid down. Anyhow from the letter of the Superintendent of Govt. Gardens it can be seen that no amount is required from the I.C. of A.R. this year.

Now I shall deal with the actual working of the scheme. In the second letter it is stated that "a piece of land 30 acres in extent has been selected in close proximity to the Lal Bagh and the Horticultural Farm with a view to facilitate efficient control and supervision and also easy access to the visitors who are interested in Horticulture . "The source

of water for this orchard would be the three existing wells equipped with pumps of suitable discharging capacity . The actual location of this site is not stated. It is taken that this a different site from what is referred to in the first letter, though both are said to be near the Lal Bagh. The capacity of the pumps may be all right but the question is that of the adequacy of the supply of water about which nothing is stated. This is, however, quite contradictory to what is stated in the first letter viz. "Borehole trials in this area seem to indicate that there is not much water to be tapped even in the lower strata. However good the soil may be and the facilities that are nearby this area one the score of dearth of water alone should be ruled out of consideration". It is stated that there is not enough water for 45 acres. And yet it is recommended that "experiments connected with mangoes, grapes and citrus fruits should be conducted in a site adjoining the Fruit Research Station . Wells were several times dug in different places in the southern block of the Horticultural Farm, which I expect is on a lower level than the proposed site, but water could not be found there. If I remember right the water in the large well in the Sunnakal Farm is brackish.

The value of the land is estimated at Rs.500/- per acre. The same price, if not something higher, would have to be paid in the case of land required for extension, if land is available at all. Any site that is selected must be capable of extension to the fullest limit not only for present needs but also for anticipated future requirements. (I am convinced more than ever that Mysore State has conditions suitable for tremendous expansion of fruit cultivation and before long it ought to be the chief centre of production of fruit for practically the whole of South India). It should

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also be remembered that labour is very expensive here, the site being so near the city.

The proximity to Lal Bagh and Horticultural Farm are considered to be advantages. Efficient control and supervision are said to be the advantages. Here frequency of visits does not constitute efficient control; as for supervision it is the man in charge who is responsible for it. Others will have no time for it. When a place is close to the main institution it often happens that the inspecting officer is called back by some visitors who go to Lal Bagh, or to attend to some requisition or other. On the other hand if it is away at some distance, one goes there with a definite purpose and one is able to put in some hours doing useful work. The staff of the existing institutions are not to go and work in the Research Station, otherwise their legitimate work will naturally suffer. There is every likelihood of the Research Staff being told off by the officers to attend to odd jobs beyond the sphere of their own work on account of urgent demands fro many sources which are always present in the case of officers of Government Gardens, to the detriment of work connected with the Research Station. Lal Bagh is a public place and quite a number of people who have nothing to do try to do it there, often trespassing on the time of the staff. This results in loss of time to the officers. The same thing will occur in the case of the Research Station if it is close to Lal Bagh. A fruit garden, particularly when the trees are bearing, is an attraction for every one whether interested in real horticulture or not;

school children will be among interested visitors.Research work must be free disturbance.

One has to remember the number of thefts of crops, that have occured in the Horticultural Farm. Then again the Hosoor road and the ni neighbourhood of Lal Bagh and Sunnakal Farm is well known to be the home of monkeys which are a source of great damage to seedlings, flowers and fruits. They cannot be got rid of from there.

Another advantage claimed for this site is that the buildings such as the barn in the Horticultural Farm, Old Herbarium and Bureau of Economic Botany etc., can be made use of for the research station, as they are suitable for the purpose. It is difficult to see how these buildings which exist at different places will serve the purpose of the Research Station without detriment to the work in the institutions to which they belong. From Appendix A it is seen that the office is to be in the Horticultural School Buildings in the Lal Bagh, the stores in the Barn at the Horticultural Farm and the Laboratory in the Bureau of Economic Botany attached to the Lal Bagh Office. The difficulty of managing work in these places which are at some distance from each other can easily be imagined.

A few new buildings and alterations to other buildings have been suggested at a cost of Rs.4,000. It is not known with what effect the buildings are to under alterations as far as their present utility is concerned. Whether it is necessary to spend large sums of money on contructing new permanent buildings to start with has to be decided.

It is a matter for Government to consider how the buildings which are part of existing Government institutions could be treated as buildings to be provided for the scheme of Research, their valuation (Rs.37,000) being shown under items of non-recurring expenditure by the Government of Mysore. In the case of schemes brought up for consideration here people are generally suspicious that they are for strengthening an existing department or to provide appointments for the men whom the authors of the scheme have in view.

I cannot visualise the site situated near the Lal Bagh and the Horticultural Farm that could be eminently suited for the Research Station in which the cultivation of apples ~~a~~ is the chief work. The area is at the foot of the depression in the ground; mildew attack is likely to be severe. No one has grown apples there, though much of the land is taken up by market gardens for vegetable cultivation.

The atmosphere of a site anywhere near the sewage farm and the cemetery and the crematorium is obviously not suitable for a Research Station for more reasons than one.

It would be very desirable that schemes requiring large areas like the one under reference should be kept well away from the growing city of Bangalore.

The Hesargatta site has been referred to as Saldevanahalli lands, but nothing is stated about the actual selection or the exact situation. From the description of the land it seems to me that it does not include the plots selected by me. The land was

inspected with Messrs. N.Subba Rao and M.F.Lazier, Executive Engineers (and Mr.Pillay, their assistant) and I think Mr.Anantaraman too who was then the Deputy Commissioner. Mr. Pillay ought to know the details. Actual plans drawn by the P.W.D. on which the area was marked had been submitted to Government. I attach a rough sketch showing approximately where the plots were situated. The land near the railway may show crops of rocks but I do not think the fruit plots were ever meant to be there. The whole plot is said to be alkaline which is impossible in the case of the plots selected by me. They speak of the river and the bank of a nulla which were nowhere near those plots. And I cannot imagene selecting a land under "heavy growth of casuarina" for opening an orchard. It is possible that in the area selected, there might have been in the lower portions an alkaline plot and a casuarina plantation but that would be outside the experimental plots. I had an ideal of having extra land for cattle and sheep to graze and move about as can be seen from the original scheme. I do not think that the land was at the tail end of the duct channel, though the disadvantage can be overcome by not allowing water or allowing only surplus water to those cultivating crops those lands. It is stated in the letter that "it will supply water by gravitation", but you may see that I had provided for pumps and electric power in my estimates (vide page 17 of booklet) which would not have been necessary had the plots been in a situation where water could be had by gravitation. I do not know whether the Baldevanahalli lands referred to in their letter is a later selection. I had not the time to go into the question fully and I cannot say at this distance of time the number of acres of land under soil suitable for apple cultivation. I cannot, however, believe that the whole area I selected was alkaline and that the soil

88

was not deep enough for fruit plants.

Reference has been made to the necessity of uniformity of soil and sub-soil. In Nature it is not possible to find the same type and depth of soil and sub-soil over an area of 20 acres or more and that is why the different systems of laying out experimental plots are adopted. Moreover the aim should not be to take up exceptionally rich lands but typical representative soils suitable for the cultivation of the particular kinds of the fruit trees under trial. Chemical examination is not everything. "Broadly speaking the physical condition of the soil is more important in fruit production than is its chemical composition, though it should not be inferred that poor soils are preferable to good soils for orchard purposes. Soils that are unproductive from the standpoint of cereal crops are often productive from the standpoint of fruit productions, and the reverse situation often occurs. The soil that is productive in pineapple cultivation may be unproductive in avocado cultivation. The only satisfactory measure of soil productivity is in terms of crop production of the specific plant under consideration". (Fundamentals of fruit production by Gardner, Bradford & Hooker).

I do not know where the necessity was to consider areas under Krishnaraja Sagara and the Irwin Canal Farm near Mandya. They were for obvious reasons out of consideration. If any place should have been though of outside Bangalore, Hassan should have had the preference. That is by the way, however.

Finally it is found that the authors of the report have come across a piece of land in Hasarghatta area near the Rest House. This land had been seen and considered. But it was not chosen .....

as I was given to understand that its acquisition would be a difficult matter as it was in a Jodi Gramm and also as it was on a higher level than those plots selected near it on either side of the road leading to the Rest House from the pumping station.

I must deal with the third site - the Grand Valley Estate - mentioned in the letter, though in doing so I shall be in an awkward situation. I feel particularly happy that its criticism which sloppily & inaccurate does not extend over one sentence. I presume the authorities find it satisfactory in all other points except in that it is in an "open valley with no proper communications". It is not known whether they have inspected the site and whether they prefer a closed-in valley or a hill top and whether they think that an open valley is not suitable for an orchard. Many of the best orchards all over are in valleys. It is a distince advantage to locate orchards and other plantations in valleys on account of the protection they get from the prevailing winds which are most damaging both to the trees and their crops - a consideration of vital importan in fruit cultivation. If the slope is such that the plants are protected to a certain extent from western sun as in the case of the Grand Valley, it is a great point in its favour. Sunscorch does a great deal of damage to apple plants. As for lack of proper communication I have only to say that one can drive one's cars in car into the garden as well as up to the front door of the house. The road is certainly not so good as fine metalled roads but it could easibly be improved at a very little cost. Modesty forbids me from describing all the good points of this property in the way it deserves, but suffice it to say that there are plots where soil

90

conditions are suited to different kinds of fruit trees, and there is a good supply of water. The surplus water from the three tanks above runs in a channel on one side of the valley. There is perennial supply of water not only in existing wells but in trial wells which were tested. Some of the fields which are already formed have typical soild for apple cultivation. (I have planted apple trees myself. They will not gaxx grow in any kind of soil however well suited it may be for some other fruit tree.) The plots have such slope as will allow proper drainage. There are already existing fruit and other commercial plants, pineapple included, which yield an income so that the interest on the capital invested is forthcoming. There is great scope for the expansion of the experimental orchards. An experimental station for vegetables can be oponed here. (I had in contemplation the drafting of a scheme to be sent to I.C. of A.R. I am not aware of any scheme for research on vegetables, which is also very important. There was an idea of converting the Gunnakal Farm into a Grass Farm giving up the cultivation of vegetables there on account of the danger of its being one of the causes of typhoid fever coming through eating uncooked vegetables grown under sewage water). There is a quarry on the spot from where stone for building purposes may be had. The exh environments are suitable for a fruit research station. From a landscape point of view it is beautiful and it will be a pleasure to visitors to go there. It is only about five miles from the Lal Bagh. There is a pucca built house with large rooms fitted up with electric lights and also cattle sheds. There are sheep which provide manure most necessary for apple cultivation and the cost of sheep manure is very high. There is an electric pumping installation. Mr. Krumbiegel who went

71

round the place with me praised it much and said that he was goint to place before the Government a true description of each of the sites and leave the choice to them. Please let me assure you that I have not said all this with any personal motive of gain. I would have kind said the same-nay much more-- had it belonged to some one else. A lot of points should be considered in the working of an orchard, not merely a frew general principles. Small details either make or mar the success of any horticultural industry as Mr.Krumbiegel used to say. If the Govt. takes either the whole or a part of this estate, it will give me much pleasure in the idea that the Research Station would be situated on a suitable land on the selection and the working of which I had personally bestowed much attention. If on the other hand you do not choose to take it, it does not matter. I should, however, be most unhappy if a place which is not well situated for the purpose of the Research Station, in the cause of which I have striven hard, is selected. But I am certain that the Government o Mysore will not do so, otherwise things would have been settled by this time. I must here take the opportunity of offering my thinks to you for having given me the privelege of offering my opinion in the matter.

Coming now to the financial aspect of the scheme, the second letter which has taken into account the working of only 30 acres as against 45 acres as sanctioned by the I.C. of A.R. provides only two statements showing the expenditure to be met by the Government of Mysore and no details showing the spread of the amount over the period of five years are available. Since it is necessary to take the area of 45 acres the estimates in the first letter have to be taken into consideration.

I think it will be possible to reduce the expenditure so that the whole area of 45 acres may be taken up. The old estimates prepared by me have been so much battered about that it is not possible now to revise the estimates. I have made some notes on the statements attached to the letter. The first page on which the estimates are dealt with, that is page No.7 of the letter is unfortunately missing as stated before. It is stated that "the scheme with the alterations now suggested by us will work up to a total cost of Rs.1,69,919 out of which the I.C. of A.R. will provide Rs.46,200 and the contribution of the Government of Mysore will be Rs.1,23,719". This sum to be provided by you is far too high. It is stated that the difference in the allotment for labour is Rs.3,755 which is not much after all. The estimates seem to be based, on the calculation made on each acre. If the whole area of 45 acres is taken into consideration and items which are common to all sections of the orchard are considered together the cost of labour and cultivation could be reduced. Certain types of labour such as trenching, pitting, etc. may be arranged to be got done on contract basis instead of on daily or monthly wages. An experimental orchard should not only aim at conducting the necessary experiments but also demonstrating to orchardists the most economical method of planting and maintaining an orchard. A few observations are made on some of the items of expenditure.

Statement I. (1) Lands have to be paid for in any case; the cost will depend on the situation.

(2) As for buildings it is a case of estimating their value if they are already there. Otherwise cheap structures may be put up, and in the case of quarters, house rents may, if necessary, be given and the staff may find accommodation as near as possible to the place of work.

(3) Equipment.- Buildings should not be mentioned under this heading when there is a separate section for it. Formation of land should also be separated.

Statement II. For establishment a sum of Rs.36,414 is put down; if I remember right I.C. of A.R. sanctioned Rs.26,000 and odd, which was accepted. Bullocks should no be under recurring expenditure.

Statement IV. Apples.- distance of planting 20' x 20'. This is too wide apart, 14 ft. each way will quite do. Cost of Manure is said to be Rs.2/- per cart here, and 1/8 in Statement VI, and Rs.1/4 in Statement V.

Manure has been provided for at a cost of Rs.4,500 spread over five years. Why should another sum of Rs.27/- be charged per acre?

Statement V. Pineapples.- cost of pineapples at 8 suckers per rupee, Rs.500 per acre. It is too high. When buying by hundreds and thousands wholesale rates should be quoted. There would be a large number of suckers in the Lal Bagh Fruit Nursery which can be sold at wholesale rates. For plain planting three acres about 15,000 suckers are required. Such a large number may not be available. It is therefore desirable to plant one acre in the first year. In the second year suckers will be available from the previous year's plants. Again a sum of Rs.37/8 is put down for manure for an acre of pineapples, after providing the cost of manure elsewhere.

Statement VI. Miscellaneous fruits. -- distance of planting 25' x 25'. It is hoped that this is the average; different fruits require to be planted at different distances. Excavation of 1ft is charged at 3 as. a cu. ft. whereas in Statement IV it is charged at 8 pits per rupee, the size of the pit is the same. Pears are included here. It is hopless to try to grow pears in

Bangalore ...ho/ all not do well.

...ailed technical pro...me ... ...
called for as can be seen from the preamble to the ...tt
In the Advisory Board meeting held in July 1935 it was
resolved that a plan of the lay-out of the experimental
plots with a technical programme of work should be
submitted for approval before the work is started. It
is therefore, necessary that particular care should be
bestowed in drawing up the note. I am afraid the
information given in the letters about experiments is
by no means adequate.

The following are a few observations under
"Experiments":-

Apples. 1. Varietal tests.- "Ten of the most important
varieties of apples will be tested" Which are those
ten varieties? Besides Rome Beauty" I cannot think of
more than five varieties which may be considered as eve
fairly good among the numerous varieties tried on a de
scale in Bangalore.

The number of plants of each variety under dif...
ent experiments must be as large as possible. Flouri...
ing apple trees die with little notice on account of
collar rot and whitents attacking the roots. On has
be prepared for this acute contingency. The inherent
variation of trees should also be taken into conside...
tion in this connection.

A note of warning is necessary in regard to
selection of apple plants. It is stated that
Europe and America will be ordered. What is s...
hardy in the temperate climates will not be ...
The selection of the varieties of apples should
the greatest care. The descriptions in the c...
are apt to be misunderstood. Plants from

95

may also l
luded in the varietal tests.

Pollinatio
Experiments require much thought.
Experiments have
y been conducted in other countries
and their results ind
that best results are obtain-
ed when particular varie
re pollinated with partic-
ular other varieties. Thi
serve as a guide in
drawing up the scheme of experi
s under this head.

A complete redrafting of the ex
riments
is suggested.

Pineapples. 1. Varietal Experiments
fe
a few more than 6 varieties and they may b
vided fo

2. Irrigation Experiments. "
ole as
apple No one will think of irrigating pineapple
plants in the ring system which is practised in the case
of apple trees.

About the receipts it is said in the firs
letter that they would amount to "anywhere from
Rs.52,000 to Rs.74,00
while the note attached to th
second letter shows the figure Rs.15,900. I doubt if
would mean all this
fruits on 17 acres
of them are not li
to yield much in five years

Finally about marketing the produce it is
stated that the "Government of Mysore may make arrange-
ments with the Department of Industries and Commerce.
Otherwise adequate space will have to be provided for
storing over a hundred tons of fruits in cool airy store
house' No doubt systematic arrangements for marketing
would have to be made, but the 100 tons of fruits will
not come in all at once.